J Class
Owner’s Guide

Workstation Systems Group

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Preface

This owner’s guide describes how to use your HP 9000 J Class workstation.

This manual assumes that you have installed your workstation as described in the *J Class Hardware Installation Guide.*

Audience

This guide is intended for HP 9000 J Class workstation users.

Safety and Regulatory Statements

See Appendix A in the back of this manual for safety and regulatory statements that apply to this workstation.

Release Document(s)

Please refer to the *Release Document(s)* you received with your system or system software for additional information that we may not have been able to include in this guide at the time of its publication.

Related Manuals

If you are using HP-UX version 9.05, refer to the following manuals for more information:

- *J Class Hardware Installation Guide* (A4081–90600)
- *Using Your HP Workstation* (A2615–90001)
- *Installing and Updating HP-UX* (B2355–90039)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355–90040)
- *Installing Peripherals* (B2355–90041)
- *HP Visual User Environment User's Guide* (B1171–90061)
- *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* (B2355–90038)
- *Using HP-UX* (B2910–90001)

To order manuals, please contact your local sales office.

If you are using HP-UX version 10.0, refer to the following manuals for more information:

- *J Class Hardware Installation Guide* (A4081–90600)
- *Using Your HP Workstation* (A2615–90003)
- *Installing and Updating HP-UX* (B2355–90050)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355–90051)
- *Configuring HP-UX for Peripherals* (B2355–90053)
- *HP Visual User Environment User's Guide* (B1171–90079)
- *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* (B2355–90038)

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Revision History

The revision history for each edition of the manual is listed below:

HP Part No.	Edition	Revision History
A4081–90601	E0195	First printing
A4081–90607	E0695	Second printing
A4476–90013	E0596	Latest printing

Documentation Conventions

Unless otherwise noted in the text, this guide uses the following symbolic conventions.

literal values	Bold words or characters in formats and command descriptions represent commands or key words that you must use literally. Pathnames are also in bold.
user-supplied values	Italic words or characters in formats and command descriptions represent values that you must supply.
sample user input	In examples, information that the user enters appears in color.
`output`	Information that the system displays appears in `this typeface`.
Enter	A colored rectangle with rounded corners and a key label denotes a key on your keyboard. (In this manual we refer to the **Enter** key. On your keyboard the key may be labeled either **Enter** or **Return**.)
Screen Button	This colored symbol with a label in it denotes an HP VUE screen button. A screen button is a key or button which is drawn on your workstation's graphic display by HP VUE. It works like a keyboard key, except that you must move the mouse cursor over it and press the left mouse button to activate it. The screen button's label describes its function.
	This symbol indicates a notice.
	This symbol indicates a procedure.
	This symbol indicates a caution.
	This symbol indicates the end of a chapter or a part of this guide.

Questions, Suggestions, or Problems

If you have any questions, suggestions, or problems with our hardware, software, or documentation, please call 1–888–301–5932 (US & Canada) or contact the HP Response Center for your country.

Contents

Preface

Chapter 1 System Overview

Product Description 1-3
System Unit Front Panel Controls, LED, and LCD 1-6
System LCD 1-7
System Power Switch 1-7
System Power LED 1-8
Removable Device Buttons and LEDs 1-8
System Unit Rear Panel Connectors 1-10
Audio Connectors 1-12
Keyboard Connectors 1-14
HP Parallel I/O Connector 1-15
802.3 Network Connectors 1-15
RS-232C Serial Input/Output Connector 1-15
SCSI Connectors 1-16
Power Cord Connector 1-16
Monitors 1-17
Keyboards 1-18
Keyboard Differences 1-18
Pointing Devices 1-21
Operating System Overview 1-22
Important Information You Need to Note 1-23
LANIC ID 1-23
SCSI ID and Device File Information for HP-UX 9.05 1-25
SCSI ID and Device File Information for HP-UX 10.0 or Later 1-25

IP Address and Subnetwork Mask Information 1-26
Networking Overview 1-27
Mail 1-27
telnet 1-27
rlogin 1-27
ftp 1-28
rcp 1-28
NFS 1-28

Chapter 2 Setting Up Your Printer

Gathering Printer Information 2-3
Setting Up a Local Printer Using SAM 2-4
Setting Up Your Printer for Network Printing 2-10
Printing a File 2-12
Solving Printing Problems 2-13

Chapter 3 Using Your CD–ROM Drive

CD-ROM Drive and CD-ROM Media Descriptions 3-3
CD-ROM Drive 3-3
Controls and Features 3-3
CD-ROM Media 3-5
Caring for CD-ROM Discs 3-5
Operating the CD-ROM Drive 3-6
Loading and Unloading a CD-ROM Disc 3-6
Loading a CD-ROM Disc 3-6
Unloading a CD-ROM Disc 3-9
Verifying the CD-ROM Drive Operation 3-11
Using Device Files 3-14
Mounting and Unmounting a CD-ROM Disc 3-15
Mounting a CD-ROM Disc Using SAM 3-15
Unmounting a CD-ROM Disc Using SAM 3-18
Reading the Busy Light 3-21
Troubleshooting 3-22

Chapter 4 Using Your DDS Tape Drive

DDS Tape Drive and Data Cassette Descriptions 4-3
- DDS Drive 4-3
  - Controls and Indicators 4-3
  - LEDs – DDS-DC Drive 4-4
  - LED Warning Conditions – DDS-DC Drive 4-5
  - LEDs – DDS-2 4-6
- Data Cassettes 4-7
  - Media Life 4-7
  - Cleaning the Tape Heads 4-7
  - Media Restrictions 4-8
- Setting the Write-Protect Tab on a Data Cassette 4-8

Operating the DDS Tape Drive 4-9
- Loading and Unloading a Data Cassette 4-9
- Verifying the DDS Tape Drive Operation 4-10
- Using Device Files 4-12
- Archiving Data in Compressed and Noncompressed Mode . 4-13
- Writing to a Data Cassette 4-14
- Restoring Files from a Data Cassette to Your System 4-15
- Listing the Files on a Data Cassette 4-16
- Further Command Information 4-17
- Media Interchangeability Restrictions 4-17
- Troubleshooting 4-17
- Ordering Information 4-18

Chapter 5 Using Your 3.5–Inch Floppy Drive

Using the Floppy Diskette 5-3
- Setting the Write-Protect Tab on a Diskette 5-3
- Inserting and Removing a Diskette 5-4

Operating the Floppy Drive 5-5
- Verifying the Floppy Drive Configuration 5-5
- Using Device Files 5-7
- Formatting a New Diskette 5-8
- Transferring Data To and From a Floppy Diskette 5-8
- Saving Files to a Floppy Diskette 5-9

Restoring Files from a Floppy Diskette to Your System 5-9
Listing the Files on a Floppy Diskette 5-10
For More Information 5-11
Configuring the Floppy Driver 5-12
Troubleshooting 5-12
Ordering Information 5-12

Chapter 6 Solving Problems

Common Problems and Solutions 6-3
Dealing with a Boot Failure 6-10
Memory Failures 6-11
LCD-Indicated Problems 6-12
Running System Verification Tests 6-15

Appendix A Safety and Regulatory Statements

Declaration of Conformity A-2
Federal Communications Commission (FCC) A-3
Emissions Regulations A-3
VCCI Class 1 ITE A-4
Emissions Regulations Compliance A-4
Datacom Users Statement (United Kingdom Only) A-4
Regulation On Noise Declaration For Machines –3. GSGV . A-4
Acoustics A-4
Electrostatic Discharge (ESD) Precautions A-4
Laser Safety Statement (For U.S.A. Only) A-5
IEC 825 Class 1 Laser Label A-5
Warnings and Cautions A-6

Appendix B Changing Your Workstation's Hardware Configuration

Checking the SCSI IDs B-3
Opening the System Unit B-6
Closing the System Unit B-8
Installing Removable Media Devices B-10

CD-ROM Drive B-14
DDS Tape Drive B-16
Floppy Drive B-20
Adding a Hard Drive B-27
Installing a Hard Disk Drive B-30
Configuring a Hard Drive B-33
Installing Additional Memory B-36
Adding a Second Processor B-44
Installing an EISA or Graphics Board B-50
Changing Your Monitor Type B-60
Setting the Monitor Type from the Boot Console Interface . B-60
Setting the Monitor Type at Power On B-60

Appendix C SCSI Connections

SCSI Bus Differences C-3
SCSIRestrictions C-5
Cables C-5
Connectors and Terminator C-7
SCSI Configuration Constraints C-7
Single-Ended SCSI-2 Bus Configuration Constraints C-7
Fast, Wide SCSI-3 Bus Configuration Constraints C-9
Determining SCSI Bus Length C-9
Single-Ended SCSI-2 Bus Length C-9
Fast, Wide SCSI-3 Bus Length C-12
Assigning SCSIDevice IDs C-14
Single-Ended Standard System SCSI Device IDs C-16
Fast, Wide SCSI IDs C-20
Connecting to the SCSI Ports C-21
System SCSI Port Connection C-21

Appendix D The Boot Console Interface

Boot Console Interface Features D-3
Accessing the Boot Console Interface D-8
Booting Your Workstation D-9
Searching for Bootable Media D-11
Resetting Your Workstation D-12

Displaying and Setting Paths D-12
Displaying and Setting the Monitor Type D-14
The Monitor Command D-14
Displaying the Current Monitor Configuration D-15
Setting the Monitor Type D-16
Displaying the Current Memory Configuration D-19
Sample Output 1 . . . . . D-19
Sample Output 2 . . . . . D-20
Displaying the Status of the EISA Slots D-22
Setting the Auto Boot and Auto Search Flags D-23
Displaying and Setting the Fastboot Mode D-24
Displaying the LAN Station Address D-24
Displaying System Information D-25
Displaying PIM Information D-25

Glossary

Index

Figures

1–1. System Unit Front Panel Controls 1-6
1–2. LCD Symbols 1-7
1–3. System Unit with Removable Device Door Open 1-9
1–4. System Unit Rear Panel Connectors 1-11
1–5. Audio Connectors 1-12

3–1. CD-ROM Drive Controls and Features 3-3
3–2. CD-ROM Disc Tray Partway Open 3-6
3–3. Placing the CD-ROM Disc in the Disc Tray 3-7
3–4. Disc Tray Closed 3-8
3–5. CD-ROM Disc Tray Partway Open 3-9
3–6. Removing the CD-ROM Disc From the Disc Tray 3-10
3–7. Disc Tray Closed 3-11

4–1. DDS Drive Controls and Indicators 4-3
4–2. Setting the Write-Protect Tab on a DDS Tape 4-8
4–3. Loading a Data Cassette 4-9

5–1. Setting the Write-Protect Tab on a Floppy Diskette 5-3
5–2. Inserting and Removing a Floppy Diskette 5-4

B–1. Removing the Front Panel B-7
B–2. Replacing the Front Panel B-9
B–3. Removing Storage Drawer from System Unit B-11
B–4. Removing EMI Plate B-12
B–5. Removing Drive Screws B-13
B–6. CD-ROM Drive SCSI Address/Jumper Settings B-15
B–7. DDS-DC Tape Drive SCSI Address/Jumper Settings . . . B-17
B–8. DDS-2 Tape Drive and SCSI Address/Jumper Settings . B-18
B–9. Switch Settings for Data Compression Operation Mode . B-19
B–10. Floppy Drive SCSI Address/Jumper Settings B-21
B–11. Floppy Drive Terminators B-22
B–12. Attaching Removable Drive Mounting Bracket and Drive Orientation B-23
B–13. Replacing Drive Screws B-24
B–14. Replacing the Storage Drawer Assembly B-25

B–15. Fast, Wide Hard Drive Jumper Settings B-28
B–16. Replacing Hard Drive Mounting Bracket and Drive Orientation B-29
B–17. Removing Storage Drawer from System Unit B-31
B–18. Placing Hard Drives in Storage Drawer B-32
B–19. Removing the CPU Assembly B-37
B–20. Memory SIMM Location B-38
B–21. CPU Assembly Orientation B-39
B–22. Memory SIMM Sequence B-40
B–23. Installing Memory Cards B-41
B–24. Replacing the CPU Assembly B-42
B–25. Removing the CPU Assembly B-44
B–26. CPU Shroud Location B-45
B–27. Removing CPU Shroud and Disconnecting Fan Cable . . B-46
B–28. Removing CPU and Connector Dust Covers B-47
B–29. Replacing the CPU Assembly B-48
B–30. EISA/GSC Slots from Outside the EISA Assembly B-50
B–31. EISA/GSC Slots from Inside the EISA Assembly B-51
B–32. Removing the EISA Assembly B-52
B–33. Rotating the EISA Assembly for Installation B-53
B–34. Removing the EISA Assembly Cover B-54
B–35. Removing the EISA Slot Cover B-55
B–36. Installing an EISA or Graphics Board in the EISA Assembly B-56
B–37. Replacing EISA Assembly Cover B-57
B–38. Rotating the EISA Assembly Back B-58
B–39. Replacing EISA Assembly B-59

C–1. Rear Panel SCSI Connectors with Terminators Attached C-22
C–2. Rear Panel SCSI Connectors without Terminators C-23

Tables

1–1. Audio Electrical Specifications 1-14
1–2. Serial I/O Pins 1-16
1–3. PS/2 Keyboard to ITF Keyboard Equivalent Keys 1-19

3–1. CD-ROM Drive Operating Controls and Features 3-4

4–1. LED Display Codes – DDS-DC Drive 4-4
4–2. LED Display Codes – DDS-2 Drive 4-6

6–1. Problems Powering Up the System 6-3
6–2. Problems Loading and Booting the Operating System 6-4
6–3. Problems with the 802.3 Network 6-5
6–4. Problems Using a Hard Disk Drive 6-6
6–5. Problems Using the CD-ROM Drive 6-7
6–6. Problems Using the DDS Tape Drive 6-8
6–7. Problems Using the Floppy Disk Drive 6-9

C–1. SCSI Bus Differences C-3
C–2. SCSI Bus Addresses, ID Numbers, and Arbitration Priorities C-4
C–3. Single-Ended SCSI-2 Bus Configuration Constraints C-8
C–4. Fast, Wide SCSI-3 Bus Configuration Constraints C-9
C–5. SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus C-11
C–6. SCSI-3 Bus Length Worksheet for Fast, Wide SCSI-3 Bus C-13
C–7. Single-Ended SCSI Device IDs C-18
C–8. Fast, Wide SCSI Device IDs C-20

D–1. System Paths D-12
D–2. Mnemonic Style Notation D-13

Chapter 1

System Overview

- Product description
- System unit front panel controls, LED, and LCD
- System unit rear panel connectors
- Monitors
- Keyboards
- Pointing devices
- Operating system overview
- Important information you need to note
- Networking overview

This chapter introduces the HP 9000 J Class workstation. Its purpose is to familiarize you with your workstation and its controls and indicators.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

Product Description

This workstation has the following key features:

- Operating System — HP-UX version 9.05 or later
- User Interface — HP VUE version 3.0 graphical user interface
- Compatibility — Source and binary code compatible with the Series 700 product family
- Monitors — 17-inch 1280x1024 color monitor
  or
  20-inch 1280x1024 color monitor
- Optional Graphics — 2D color graphics (single and dual head)
  HCRX-8/HCRX-24 fast 8-plane or 24-plane graphics
  HCRX-8Z/HCRX-24Z accelerated 8-plane or 24-plane graphics
  CRX-48Z 24-plane accelerated, double-buffered graphics
  Freedom series 3150 graphics sub-system w/1 MB texture memory
  Freedom series 3250 graphics sub-system w/1 MB texture memory
  Freedom series 3400 graphics sub-system w/1 MB texture memory
- Main Memory — 32 MB to 768 MB for systems running HP-UX 9.05
  32 MB to 1 GB (1024 MB) for systems running HP-UX 10.0 or later

- Internal Storage Devices

  Fast, wide SCSI hard disk drives – up to two:
  - 1.0 GB Drive
  - 2.0 GB Drive

  Single-Ended SCSI removable Media – up to two:
  - CD-ROM Drive
  - 2.0–8.0 GB, 4-mm DDS tape drive
  - Floppy drive

- Standard Network

  Ethernet IEEE 802.3 AUI Thicknet
  or
  RJ45, UTP Twisted Pair

- Standard I/O

  One SCSI-2: Single-Ended,
  - 8-bit (for removable devices)
  - 5 MB/sec synchronous
  - 1.5 MB/sec asynchronous
  - ALT-1, 50-pin, high density SCSI-2 connector

  One SCSI-3: Fast, wide (for hard disk drives)
  - 20 MB/sec synchronous
  - 68-pin, high-density SCSI-3 P connector

  Two serial interfaces
  - RS-232C, 9-pin male

  One parallel interface
  - Centronics, BUSY handshake
  - 25-pin female

• EISA/GSC	Five slots total; four EISA and three GSC that can be used as follows: two individual EISA, one individual GSC, and two combination EISA or GSC.
• Keyboards	PS/2 Keyboard or ITF Keyboard (also known as HP HIL)

System Unit Front Panel Controls, LED, and LCD

Before powering on your system, you should become familiar with the system unit controls.

Figure 1–1 shows the the system unit front panel controls.

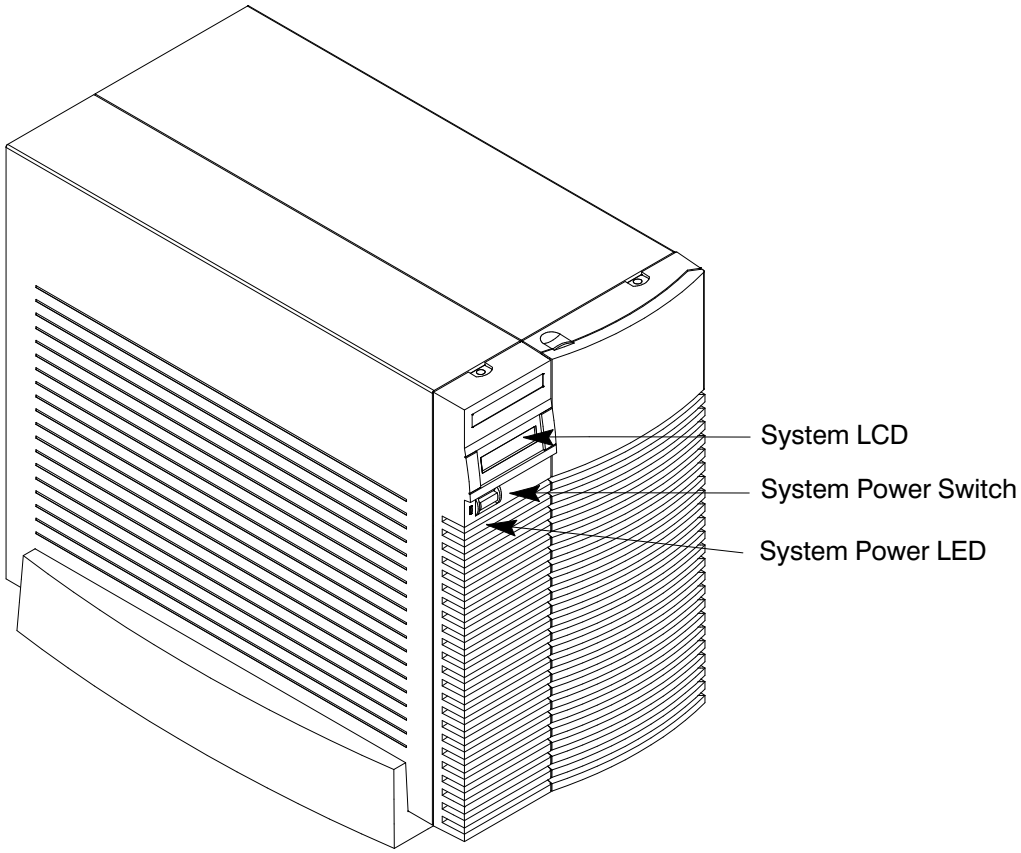


Figure 1–1. System Unit Front Panel Controls

System LCD

The Liquid Crystal Display (LCD) is located on the left side of the front panel. It displays messages about the state of the system, including error codes. The following symbols appear in the LCD, representing the different system activities shown:

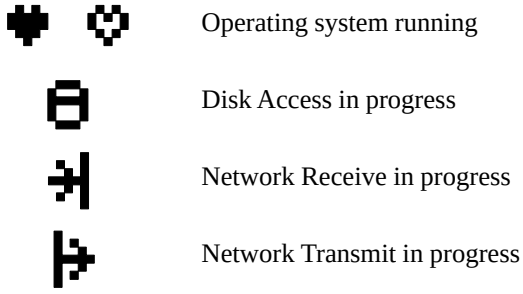


Figure 1–2. LCD Symbols

System Power Switch

Use the Power switch to power the system unit on and off.

CAUTION: **Do not** turn off the power to your workstation without first performing the recommended shutdown procedure. If you do not shut down your workstation properly, you can damage the programs and data on your disk.

Using the proper shutdown method for your workstation and operating system also ensures that your system produces the proper diagnostic and self test messages, and broadcasts a warning message to remote terminals that it is about to shutdown.

If you are using HP-UX 9.05, the recommended method of shutting down your workstation is using the software command **/etc/shutdown**.

If you are using HP-UX 10.0 or later, follow the instructions in *Using Your HP Workstation* to shut down your workstation.

System Power LED

The Power Light Emitting Diode (LED) is located on the left side of the front panel. It lights when the system unit power is on and flashes until the OS is booted. Once the OS is booted, the LED remains on without flashing.

Removable Device Buttons and LEDs

Depending on your configuration, you can have up to two (2) of the following removable device drives:

- CD-ROM disc drive
- DDS tape drive
- Floppy diskette drive

NOTICE: You **cannot** have two of the same type of device. For example, you can have a CD-ROM device and a floppy device, but not two CD-ROMs.

A description of each drive's controls and indicators is in the chapter describing that device, later in this book.

Figure 1–3 shows the system unit with the removable device door open. A removable device is in the top bay; a blank covers the empty bottom bay.

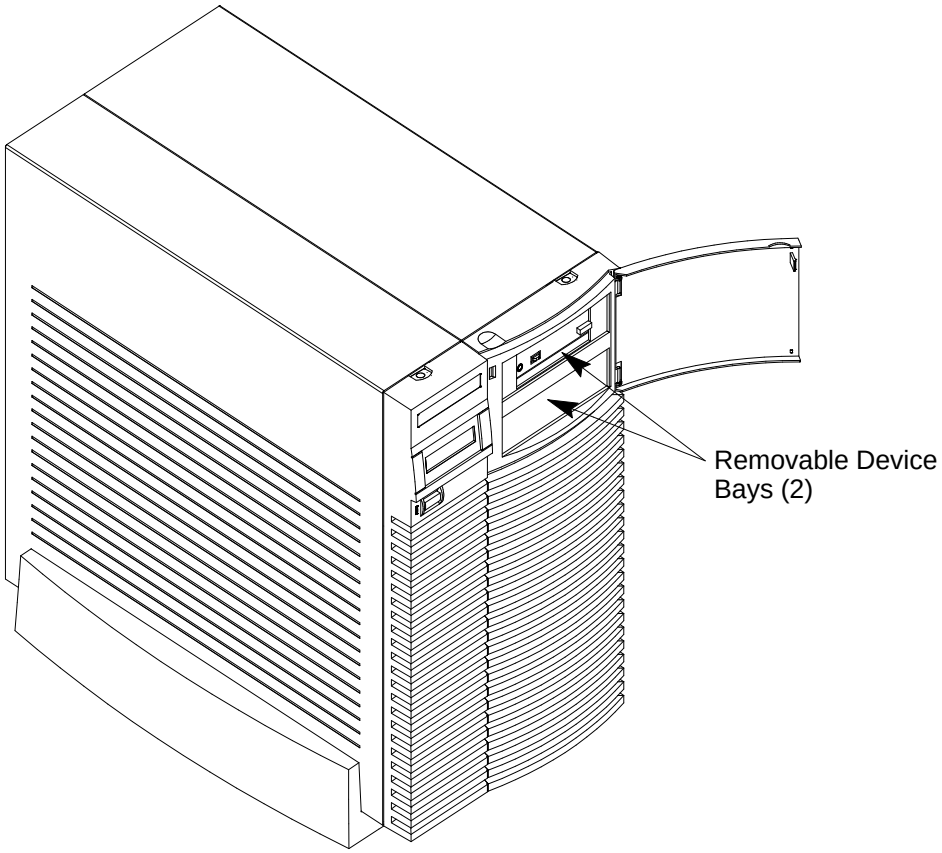


Figure 1–3. System Unit with Removable Device Door Open

System Unit Rear Panel Connectors

This section describes the following connectors on the system unit's rear panel:

- Audio connectors (including headphones and microphone)
- PS/2 keyboard and mouse connectors
- HP parallel Centronics I/O connector
- 802.3 AUI LAN connector
- 802.3 TP (Twisted Pair) LAN connector
- RS-232C serial I/O connectors
- HP HIL keyboard connector
- SCSI connectors (including fast, wide SCSI-3 and single-ended SCSI-2
- TOC button
- Power cord connector

NOTICE: To maintain FCC/EMI compliance, verify that all cables are fully seated and properly fastened.

Figure 1–4 shows the locations of the connectors on the system unit's rear panel.

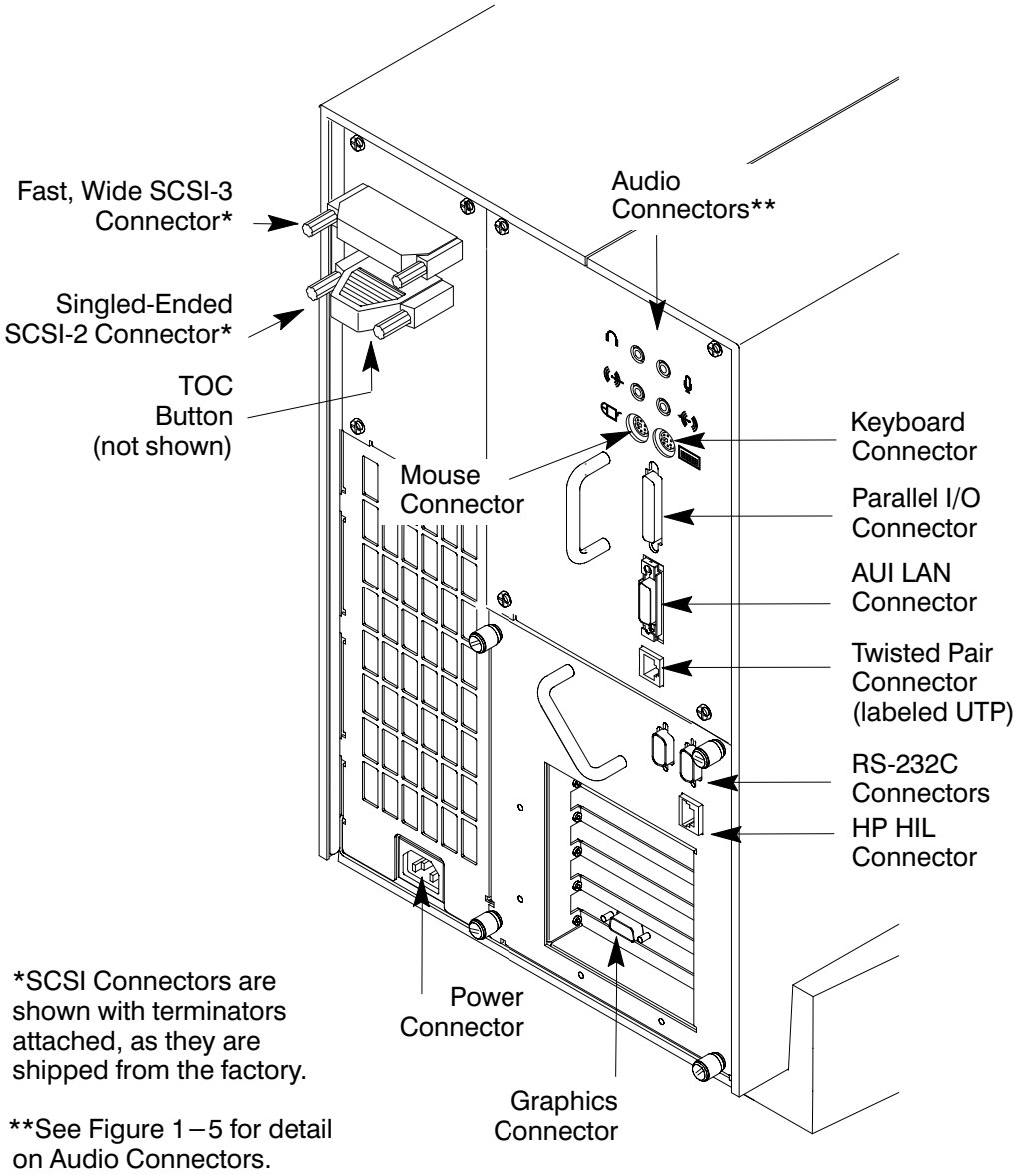


Figure 1–4. System Unit Rear Panel Connectors

The symbols shown to the left of the connector descriptions in the following text, such as the headphone and microphone for audio connectors, are the same symbols used on the rear panel of the J Class workstation.

Audio Connectors

Your workstation has audio input and output capability through external input and output connectors on the rear panel and through an internal speaker. The rear panel contains the Audio IN (stereo line-in), Mic (microphone-in), Audio OUT (stereo line-out), and Headphones (headphones-out) connectors.

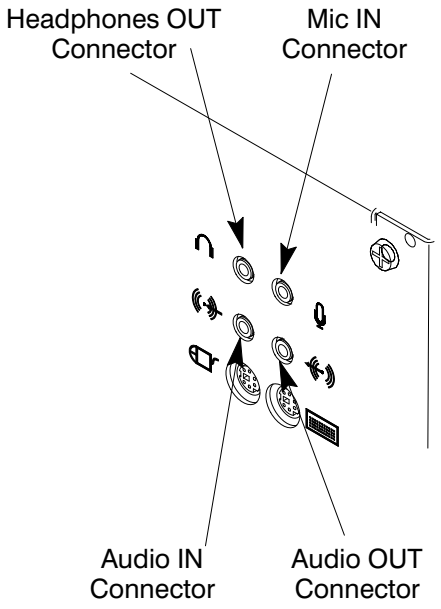


Figure 1–5. Audio Connectors

The audio connectors are standard stereo audio mini-jacks. Hewlett-Packard recommends using gold-plated plugs available through audio retailers for best quality recording and playback through the external connectors. A summary of the workstation audio features follows.

- **Audio Features** — Programmable sample rates:
  8kHz, 16kHz, 32kHz, 48kHz, 11.025kHz, 22.05kHz, and 44.1kHz.

  Programmable output attenuation:
  0 to –96dB in –1.5dB steps

  Programmable input gain:
  0 to 22.5dB in 1.5dB steps

  Input monitoring:
  16-bit linear, 8-bit u-law, or A-law coding

- **Audio Inputs** — Line-in

  Mono microphone compatible with 1.5V phantom supply (bias voltage supplied by the system)

  CD-ROM audio (if internal CD–ROM is installed)

- **Audio Outputs** — Line-out
  Headphone
  Mono speaker jacks
  Built-in mono speaker

- **Audio CODEC** — Crystal CS4215

Table 1–1 summarizes the audio electrical specifications for this workstation.

Table 1–1. Audio Electrical Specifications

Frequency Response	25–20,000Hz	
Input Sensitivity/Impedance		
Line in	2.0Vpk/47kohm	
Microphone	22mVpk/1kohm	
Max Output Level/Impedance		
Line Out	2.8Vpp/47kohm	
Headphone	2.75Vpp/50ohm	
Speaker (internal)	5.88Vpp/48ohm	
Output Impedance		
Line Out	619ohm	
Headphone	118ohm	
Signal to Noise*		
Line Out	65dB	
Headphone	61dB	
Speaker	63dB	
Line In	61dB	
Microphone	57dB	
THD (w/nominal load)		
Line Out	–73dB	
Headphone	–70dB	
Speaker	–68dB	
Line In	–75dB	
Microphone	–73dB	≈

*To convert from dB to number of significant bits, use the formula:

$$n = \frac{dB}{20 \log_{10}} \approx \frac{dB}{6}.$$ For example, for 61dB S/N then n= 61/6 ≈ 10 significant bits, or in other words, about 6 bits of noise.

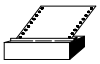
Keyboard Connectors

PS/2 Keyboard Connectors

The PS/2 connectors provide an interface for the keyboard and mouse to the system. Consult the documentation that accompanies each input device for specific information concerning its use.

ITF Keyboard Connector

The HP HIL connector provides an interface for the ITF keyboard to the system. Consult the documentation that accompanies each input device for specific information concerning its use.



HP Parallel I/O Connector

The 25-pin HP Parallel I/O interface uses Centronics interface protocols to support peripheral devices such as printers and plotters. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

802.3 Network Connectors

Your workstation has built-in ThickNet LAN AUI and TP (Twisted Pair) connectors for the 802.3 (ETHERNET) network. Connections to ThinLAN networks require an external transceiver. Your workstation will automatically select the correct network setting.

RS-232C Serial Input/Output Connector

You can attach a variety of pointing devices (such as a mouse or trackball), or peripheral devices to the RS-232C Serial Input/Output (SIO) ports on the J200 workstation. Peripheral devices include printers, plotters, modems, and scanners. Consult the documentation that accompanies each pointing or peripheral device for specific information concerning its use.

The SIO ports are programmable. You can set functions such as bit rate, character length, parity, and stop bits. The SIO Ports are used as an interface for serial asynchronous devices to the CPU. The ports operate at up to a 19.2 K baud rate.

Table 1–2 shows the SIO connector pin listings. The serial connectors are 9-pin D-sub connectors. Signal names are those specified in the EIA RS-232 standard.

Table 1–2. Serial I/O Pins

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

SCSI Connectors

Use the SCSI connectors to connect external SCSI devices such as DDS-format tape drives and CD-ROM drives. Consult the documentation that accompanies each SCSI device for specific information concerning its use. Refer to Appendix C for information about connecting SCSI devices to your workstation.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus.

Power Cord Connector

Plug the workstation’s power cord into the power cord connector to provide ac power to the system.

Monitors

You can use one of the following HP monitors with your workstation:

- 17-inch, 1280x1024 color monitor (A4032A)
- 17-inch, 1280x1024 color monitor (A4330A)
- 20-inch, 1280x1024 color monitor (A4033A)
- 20–inch, 1280x1024 color monitor (A4331A)

Before using your monitor, you should become familiar with its controls, connectors, and indicators. For information on these controls and indicators and on using your monitor, see the documentation that came with it.

Keyboards

There are two types of Hewlett-Packard keyboards available for use with your workstation. They are the following:

- PS/2 Keyboard
- ITF Keyboard

CAUTION: Use only devices that conform to the HP HIL specification with Hewlett-Packard computer systems. Devices that are not HP HIL compatible but have similar connectors may appear to be compatible, but will damage your system.

Keyboard Differences

Aside from the obvious difference in the appearance of the PS/2 and ITF keyboards due to the arrangement of the keys, there is also a difference in the keys and their output codes. For example, some keys on one keyboard may not exist on the other keyboard. These keys generate codes that may not exist as output from the other keyboard (or may be generated by a different key). Codes that are generated when a key is pressed are called *keycodes.*

Some applications expect to use keycodes generated by keys existing on one of the keyboards (the ITF keyboard for example). Since the keys do not exist on the other keyboard (the PS/2 keyboard for example), an accommodation must be made if the PS/2 keyboard is to be used. In most cases, it is still possible to use some other key that is equivalent (generates the same keycode from a different keycap). To do this, it is necessary to know which keys are equivalent on the two keyboards. Table 1–3 compares the equivalent keys of the ITF and PS/2 keyboards.

NOTICE: Keyboard keys not mentioned in Table 1–3 are the same on both keyboards.

Table 1–3. PS/2 Keyboard to ITF Keyboard Equivalent Keys

PS/2 Keycap Symbol	ITF Keycap Symbol
F9	blank1 (left)
F10	blank2
F11	blank3
F12	blank4 (right)
PrintScreen / SysReq	**Menu**
Scroll Lock	**Stop**
Pause / Break	**Break / Reset**
Page Up	**Prev**
Num Lock	**System / User**
End	**Select**
Page Down	**Next**
Enter	**Return**
Alt (left)	**Extend Char** (left)
Alt (right)	**Extend Char** (right)
No Equivalent	**Clear Line**
No Equivalent	**Clear Display**
No Equivalent	**Insert Line**
No Equivalent	**Delete Line**
No Equivalent	**Print / Enter**
No Equivalent	**,** (number pad)
No Equivalent	**Tab** (number pad)

(Continued)

Table 1–3. PS/2 Keyboard to ITF Keyboard Equivalent Keys (Continued)

PS/2 Keycap Symbol	ITF Keycap Symbol
Esc	**Esc / Del**
Insert	**Insert Char**
Home	no equivalent
Delete	**Delete Char**
Caps Lock	**Caps**
Esc Shifted	**Esc / Del** Shifted
Pause / Break Shifted	**Break / Reset** Shifted
Num Lock Shifted	**System / User** Shifted
0 / Ins (number pad)	**0** (number pad)
1 / End (number pad)	**1** (number pad)
2 / ▼ (number pad)	**2** (number pad)
3 / Pg Dn (number pad)	**3** (number pad)
4 / ◀ (number pad)	**4** (number pad)
6 / ▶ (number pad	**6** (number pad)
7 / Home (number pad)	**7** (number pad)
8 / ▲ (number pad)	**8** (number pad)
9 / Pg Up (number pad)	**9** (number pad)
. / Del (number pad)	**.** (number pad)
Ctrl (left)	**Ctrl**
Ctrl (right)	No Equivalent

Pointing Devices

You can use an HP three-button mouse, a trackball, or other options as pointing devices with your workstation by using the serial ports or the HIL port. For instructions on using your particular pointing device, see the manual that came with it.

For general information on using three-button mice and on the various cursor shapes associated with different areas of HP VUE while using a mouse, see *Using Your HP Workstation.*

Operating System Overview

Your workstation uses the HP-UX operating system, versions 9.05 and 10.0 or later. Instant Ignition systems, (systems with preloaded software), have X-windows and Hewlett-Packard's graphical user interface, HP VUE version 3.0, installed and configured.

Some systems use a version of HP-UX called "Desktop HP-UX." This version occupies less disk space than the other version because it does not include full HP-UX functionality, such as online manual reference pages (man pages).

Please refer to the "Instant Ignition System Configuration Information" sheet that shipped with your system for details on configuration.

If your Instant Ignition system does not have the kernel preconfigured with all of the device drivers you need, refer to the manual *System Administration Tasks HP 9000 Series 700 Computers* to reconfigure your kernel.

If you have any questions about Instant Ignition, refer to *Using Your HP Workstation* for more information.

Important Information You Need to Note

Before you begin using your workstation, take a moment to gather the following important information and note it in the appropriate subsection for future use:

- LANIC ID
- SCSI device ID
- Device file used for each SCSI device
- Internet Protocol (IP) address
- Subnetwork mask

NOTICE: For help with these, refer to *Using your HP Workstation.*

LANIC ID

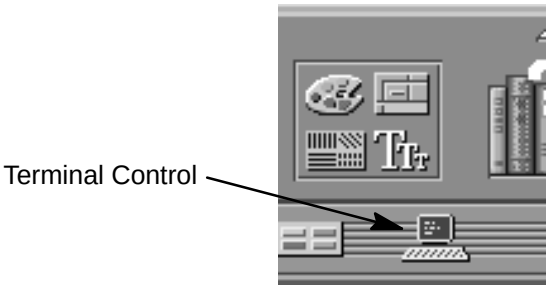
Locate the contents label that comes with the workstation shipping carton. Find the LANIC ID listed there and record it here:

LANIC ID _____

You can also get your LANIC ID by using the the **lanscan** command in a terminal window. To do this, follow these steps:

1. Turn your workstation and monitor on, if you have not already done so. Figure 1–1 of this chapter shows the location of the power switch on the workstation. See the documentation that came with your monitor for the location of the monitor power switch.

2. Move the mouse cursor to the **Terminal Control** on the **Front Panel** of your Workspace and click the left mouse button.



A terminal window opens.

3. Move the mouse cursor into the terminal window and single-click the left mouse button.

4. If you are using HP-UX 9.05, enter the following at the prompt:

/etc/lanscan Enter

If you are using HP-UX 10.0 or later, enter the following at the prompt:

/usr/sbin/lanscan Enter

You will see a table similar to the following.

Hardware Path	Station Address	Dev lu	Hardware State	Net-Interface NameUnit	State	NetMgt ID	Encapsulation Methods
2.0.2	0x0800091595EE	0	UP	lan0	UP	4	ETHER IEEE8023

The LANIC ID in this example is 0800091595EE.

SCSI ID and Device File Information for HP-UX 9.05

Default device file names for your drives are listed below. The underlined number in the device file name indicates the SCSI ID number:

Device	Device File Name
CD-ROM drive	/dev/dsk/c201d2s0
DDS-format tape drive	/dev/rmt/3m
Floppy disk drive	/dev/rfloppy/c201d0s0

These device file names assume the SCSI ID of your drive is set to the factory default. If you change the factory-set value, you must create a new device file and substitute the pathname of your device file for the pathname above. See the *System Administration Tasks* manual for information on how to create a device file.

SCSI ID and Device File Information for HP-UX 10.0 or Later

Default device file names for your drives are listed below.

Device	Device File Name
CD-ROM drive	/dev/[r]dsk/c#t#d#
Floppy disk drive	/dev/rfloppy/c#t#d#

where
c# identifies the bus address of the SCSI interface card
t# identifies the target address of the SCSI disk
d# identifies the SCSI lun address (0, except for disk arrays)

Device file names for DDS drives at HP-UX 10.0 or later depend on the naming conventions of the system on which you are installing:

For installation on a system permitting long file names

/dev/rmt/c#t#d#BEST	AT&T style, best available density, character entry, rw–rw–rw
/dev/rmt/c#t#d#BESTb	Berkeley style, best available density character entry, rw–rw–rw
/dev/rmt/c#t#d#BESTn	AT&T style, no rewind, best available density, character entry, rw–rw–rw
/dev/rmt/c#t#d#BESTnb	Berkeley style, no rewind, best available density, character entry, rw–rw–rw

For installation on a system requiring short file names

/dev/rmt/c#t#d#f0	AT&T style, best available density, character entry, rw–rw–rw
/dev/rmt/c#t#d#f0b	Berkeley style, best available density character entry, rw–rw–rw
/dev/rmt/c#t#d#f0n	AT&T style, no rewind, best available density, character entry, rw–rw–rw
/dev/rmt/c#t#d#f0nb	Berkeley style, no rewind, best available density, character entry, rw–rw–rw

IP Address and Subnetwork Mask Information

Get the IP address and the subnet mask information for your workstation from either your system administrator or your network administrator and note them here:

IP address _____

subnet mask _____

Networking Overview

Your workstation is capable of many more tasks than are described in this owner's guide. This section gives an overview of some of the networking capabilities of your system and directs you to the appropriate source for more information.

Mail

Electronic mail allows you to send and receive mail messages on your workstation. For information on setting up and using electronic mail on your workstation, contact your system administrator and also see the *Using Your HP Workstation* manual that came with your workstation.

telnet

The **telnet** application uses the TELNET protocol to communicate with another computer system on the network. The **telnet** application allows you to log on to the remote system from your workstation. For more information on **telnet** read the online man page by entering the following at a command-line prompt:

man telnet Enter

rlogin

The **rlogin** application also allows you to log on to another computer system on the network from your workstation. For more information on **rlogin** see the *Using Your HP Workstation* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man rlogin Enter

ftpftp

Chapter 2

Setting Up Your Printer

- Gathering printer information
- Setting up a local printer using SAM
- Setting up your printer for network printing
- Printing a file
- Solving printing problems

This chapter describes how to configure your workstation to use a printer that you have physically attached to either the parallel connector or the serial (RS-232C) connector on the rear of your workstation.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

NOTICES: Make sure you have installed the printer as described in the manufacturer's instructions before following the instructions in this chapter. Also ensure that the printer is powered on, connected to your workstation, has paper loaded, and is online.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Gathering Printer Information

Fill in the following list with the requested information and refer to it during the printer setup procedure:

- Printer Interface (check one):

  Parallel ☐

  Serial (RS232C) Port 1 ☐

  Serial (RS232C) Port 2 ☐

- Printer Name: _____
  (The printer name is a name the system uses to identify the printer. The printer name can be any name that you wish.)

- Printer Model Number: _____
  (On Hewlett-Packard printers the model number is located on a label on the back of the printer.)

Setting Up a Local Printer Using SAM

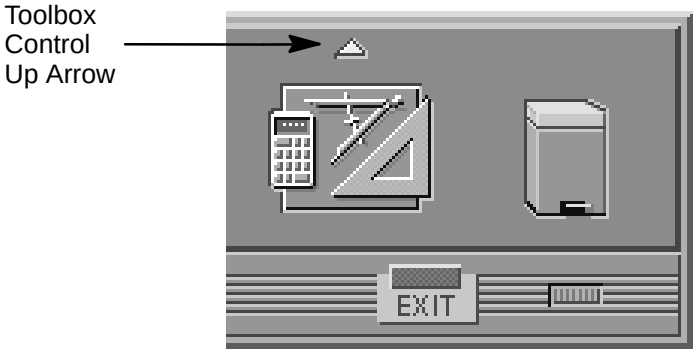
Follow the instructions in this section to set up a printer that is physically attached to your workstation.

The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

If your workstation is running HP VUE, follow these instructions to set up your printer using SAM.

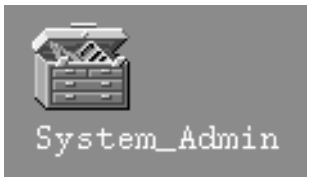
1. Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button. (This is called a single click, or simply a click.)



3. The **Toolbox** subpanel opens. Click on the **General** toolbox icon, shown below.

4. A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.



SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double-click the left mouse button.

6. The **System Administration Manager** window opens. Double-click on **Printers and Plotters –>**.

7. The **Printers and Plotters** window opens. Double-click on **Printers/Plotters**.

If your workstation doesn't have any printers set up, a message window opens. Click on [OK] to remove it.

8. From the **Actions** menu, click on **Add Local Printer/Plotter**.

9. Another menu opens. If your printer is connected to the parallel port on your workstation, click on **Add Parallel Printer/Plotter**.

If your printer is connected to one of the serial connectors on your workstation, click on **Add Serial (RS-232C) Printer/Plotter**.

A window opens displaying the available parallel or serial interfaces.

10. If you chose **Add Parallel Printer/Plotter** in the previous step, only one parallel interface will be listed. Place the mouse cursor on the listed parallel interface and click the left mouse button.

If you chose **Add Serial (RS-232C) Printer/Plotter** in the previous step, more than one serial interface may be listed. The serial interfaces are listed in ascending order. The lowest numbered serial interface corresponds to the lowest numbered serial connector on your workstation. Choose the serial interface that corresponds to the connector to which you have connected your printer. Place the mouse cursor on the selected serial interface and click the left mouse button.

11. Click on OK.

12. A window opens. Click on the **Printer Name** box. Then enter the printer's name and press Enter.

13. Click on Printer/Model Interface.

14. A window opens. Move the mouse cursor onto the scroll bar slider at the side of the new window. Press and hold the left mouse button while moving the mouse. When the model name of your printer appears, release the left mouse button.

15. Move the mouse cursor to your printer's model name and click the left mouse button.

16. Click on [OK].

The window closes and the **Add Local Printer/Plotter** window becomes visible again.

17. If you want your printer to be set as the system default printer, move the mouse cursor to the small box labeled **Make this the system default printer** and click the left mouse button.

18. Click on [OK].

19. A small window opens with a message asking if you want to add your printer to the "Printers" subpanel. Click on [Yes].

20. Another small window opens with a message that asks if you want to restart the Workspace Manager. With the left mouse button, click on [OK].

21. If the print spooler was not previously running, a window will open with the following question:

```
Do you want to start the print spooler now?
```

Click on [Yes].

22. A window appears asking if your printer is powered on, has paper, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

Click on [OK].

23. Click on [OK] at the bottom of the **Messages** window.

The **Printer/Plotter Manager** window now lists your printer.

24. Move the cursor to the word **List** at the top of the **Printer/Plotter Manager** window and click the left mouse button.

25. A menu opens below the word **List**. Click on **Exit**.

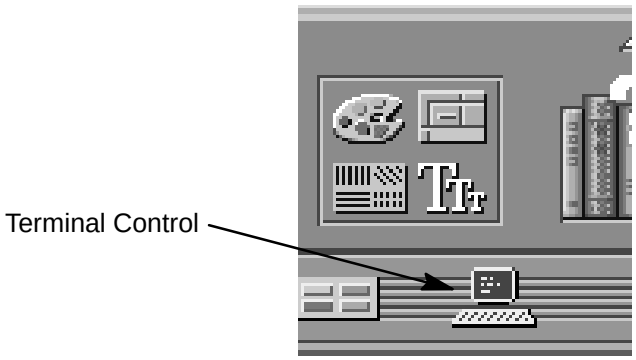
The main **SAM** window becomes visible again.

26. In the main **SAM** window, click on [Exit SAM].

The **SAM** window closes.

27. Double-click on the window menu button in the upper left corner of the **Toolbox** window. The window closes.

28. To test the printer, first create a terminal window by clicking the **Terminal Control** on the **Front Panel** as shown.



A terminal window opens.

29. Move the mouse cursor into the terminal window and click the left mouse button.

30. If you made your printer the default system printer, enter the following command to test your printer:

lp .vueprofile Enter

If your printer isn't the default system printer, enter the following command to test your printer:

lp –d *printername* **.vueprofile** Enter

The **lp** command sends files to a printer.

where *printername* is the name you chose when setting up your printer.

The file named **.vueprofile** prints out on the printer.

If the file doesn't print, see the section titled "Printing Problems," later in this chapter.

Setting Up Your Printer for Network Printing

If you have a printer physically attached to your workstation, you can set it up to receive print requests from other computers on your network. To do this, you must start up the remote line printer daemon.

Follow the instructions in this section to set up your workstation to accept print requests from other computers on your network.

1. Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2. Using a text editor, such as vi or Text Editor, edit the following file:

   /etc/inetd.conf

3. Find the following section in the file:

```
##
#
#  Other HP-UX network services
#
##
```

4. The following line should be directly below `Other HP-UX network services`:

```
#  printer  stream  tcp  nowait  root
/usr/lib/rlpdaemon  rlpdaemon  –i
```

   If the line is present, delete the pound sign (#) from the beginning. If the line is not there, add it without the pound sign (#) at the beginning.

   The line should look like the following:

```
printer  stream  tcp  nowait  root
/usr/lib/rlpdaemon  rlpdaemon  –i
```

5. Save the file and close it.

6. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

7. Move the mouse cursor into the terminal window and click the left mouse button.

8. If you are using HP-UX 9.05, enter the following command line to reboot your workstation:

   /etc/reboot Enter

   If you are using HP-UX 10.0 or later, enter the following command line to reboot your workstation:

   /usr/sbin/reboot Enter

   Your workstation shuts itself down and then reboots automatically. This may take a few minutes. When the login prompt returns, your system is ready to accept printer requests from other computers on your network.

Printing a File

To print a file, use one of the following command lines in a terminal window:

lp *filename* Enter

or

lp –d *printername filename* Enter

The **lp** command sends files to a printer.

where *filename* is the name of the file that you want to print, and *printername* is the name of the printer on which you wish to print the file.

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. Enter the **lp** command as described above.

For more information on the **lp** command, enter the following:

man lp Enter

Also see *Using Your HP Workstation* for information on printing files by dragging and dropping the file icon onto the printer tool.

Solving Printing Problems

If you have printing problems,check the following:

- Printer’s power cord is plugged in.
- Printer is powered on.
- Printer is online.
- Printer has paper loaded.
- Printer is set up for the correct interface type.
- Printer cable is connected to the correct interface port on your printer.
- Printer cable is connected to the correct interface port on your workstation.

Chapter 6

Using Your CD-ROM Drive

- CD-ROM drive and media descriptions
- Loading and unloading a CD-ROM disc
- Verifying the CD-ROM drive operation
- Using device files
- Mounting and unmounting a CD-ROM disc
- Reading the busy light
- Troubleshooting

This chapter provides an overview of the optional CD-ROM drive and media, and describes how to use the CD-ROM drive. We assume the CD-ROM drive is set to the factory default address of SCSI ID 2.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

NOTICE: Be sure you have read and understand the information on mounting and unmounting CD-ROM discs before you begin using your CD-ROM disc drive.

NOTICE: Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

CD-ROM Drive and CD-ROM Media Descriptions

This section describes basic information needed for using the CD-ROM drive and CD-ROM discs.

CD-ROM Drive

The CD-ROM drive is a random access read-only mass storage device that uses removable CD-ROM discs. The drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except that you cannot write to the drive. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with a SCSI interface.

Controls and Features

Figure 6–1 and Table 6–1 describe the operating controls and features of the CD-ROM drive.

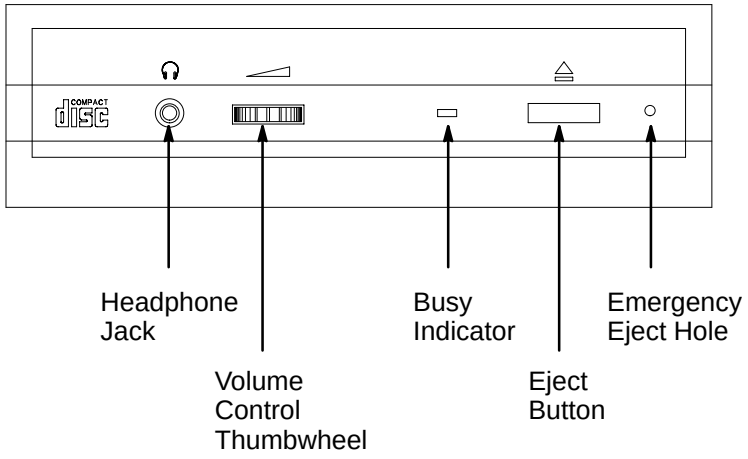


Figure 6–1. CD-ROM Drive Controls and Features

Table 6–1. CD-ROM Drive Operating Controls and Features

Control/Feature	Purpose
Headphone Jack	You can plug mini-headphones with a 3.5 mm diameter miniature stereo plug into this jack.
Volume Control	Use the volume control to adjust the audio output volume to the headphone jack.
Busy Indicator	The Busy Indicator lights during a data access operation and blinks during a data transfer. The indicator blinks initially and then stays lit when there is one of the following: • A defective disc • A disc insertion error (for example, an upside-down disc) • No disc present
Eject Button	Press the Eject Button to open the Disc Tray and insert or remove a disc. When the drive is in use, you must press the eject button for more than one second to open the Disc Tray.
Emergency Eject	By removing the Phillips type screw and inserting the end of a paper clip, you can open the Disc Tray when the workstation does not have power.
Disc Tray	The disc tray holds the CD-ROM disc. This style of CD-ROM drive does not use a disc caddy. The disc tray does not open if the workstation power is off.
NOTICE:	The Volume Control, Headphone Jack, and Audio Jack features of the CD-ROM drive are supported through applications only.

CD-ROM Media

CD-ROM discs are identical to audio compact discs (CDs), except that they store computer data.

CD-ROM discs are 120 mm (4.7 in.) in diameter, and use one data surface with a capacity of 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed. You may access files and data stored on a CD-ROM disc, but you may not write files or data to a CD-ROM disc.

CAUTION: Handle CD-ROM discs by the edges only. Always be sure a CD-ROM disc is either in the CD-ROM drive or its protective case when not in use. This will lessen the chance of exposing the disc surface to dust. Over time, dust reduces the reliability of the read head in the CD-ROM drive.

Caring for CD-ROM Discs

Observe the following guidelines to help prevent data loss and prolong the life of your CD-ROM discs and drive:

- Use CD-ROM discs in a clean environment to prevent dust particles from scratching disc surfaces.
- Store CD-ROM discs in a cool, dry place to prevent moisture and heat damage.
- Don’t try to clean the surface of a CD-ROM disc with cleaning solvents, as some cleaning solvents may damage the disc.

NOTICE: You must mount the disc after loading it into the drive. Refer to the section “Mounting and Unmounting a CD-ROM Disc,” later in this chapter, for instructions.

Operating the CD-ROM Drive

This section describes how to perform tasks with your CD-ROM drive.

Loading and Unloading a CD-ROM Disc

This section describes how to load or unload a CD-ROM disc.

Loading a CD-ROM Disc

This CD-ROM drive has an automatic loading/ejecting feature. To load a disc in the CD-ROM drive, follow these steps:

1. Press and release the eject button on the CD-ROM drive. The disc tray opens partway, as shown in Figure 6–2.

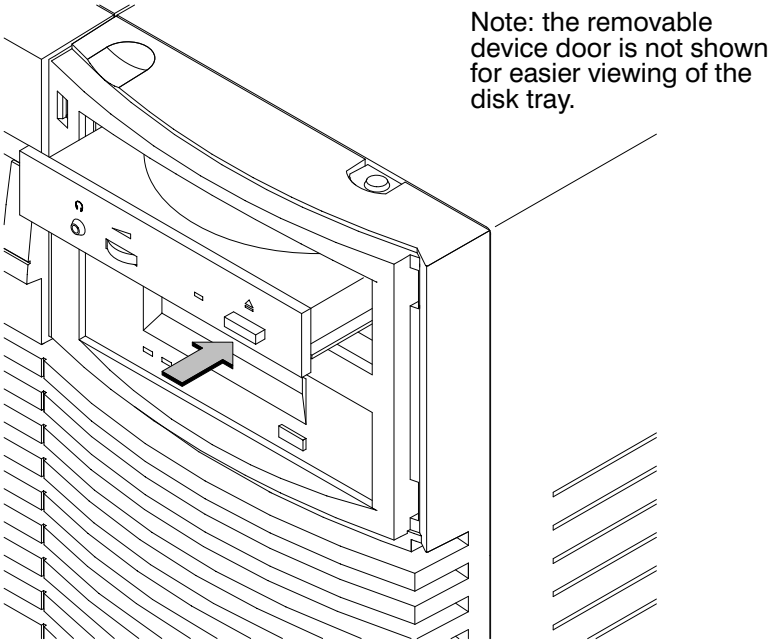


Figure 6–2. CD-ROM Disc Tray Partway Open

2. Gently pull the disc tray fully open.

3. Hold the disc by the edges with the label side up and place it in the disc tray as shown in Figure 6–3.

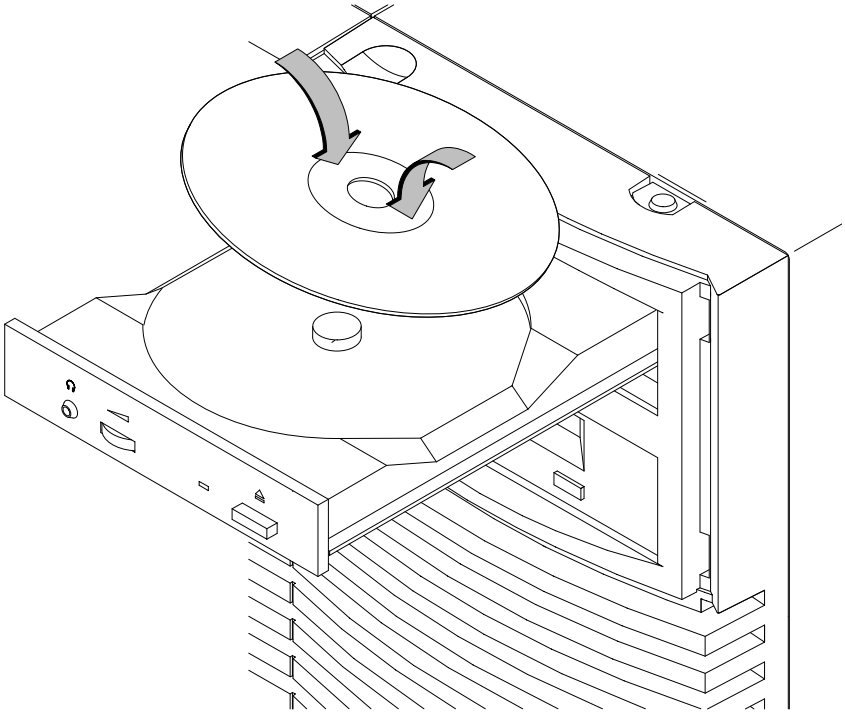


Figure 6–3. Placing the CD-ROM Disc in the Disc Tray

4. Press down gently on the center of the CD-ROM disc to make sure it is seated on the disc tray hub, shown in Figure 6–3.

5. Gently push the disc tray in until it is closed, as shown in Figure 6–4.

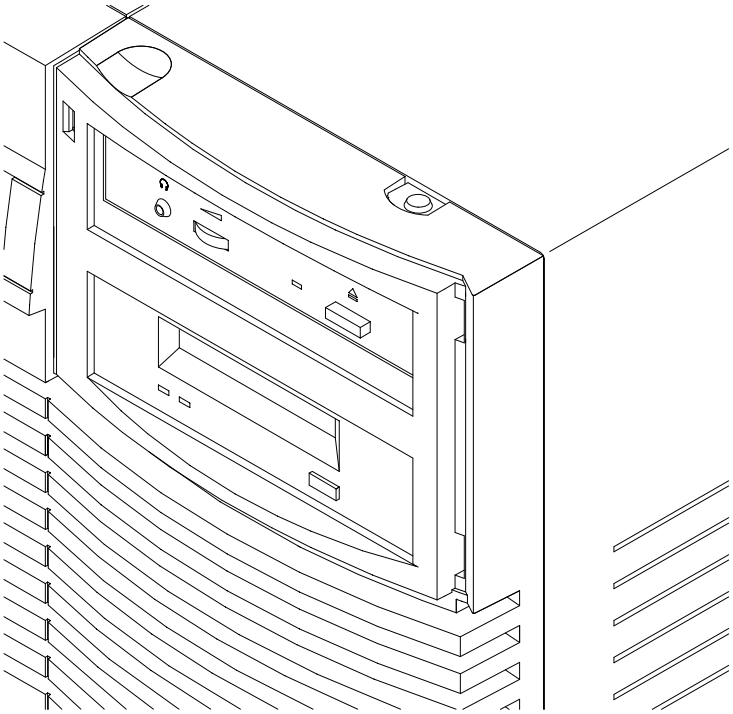


Figure 6–4. Disc Tray Closed

Unloading a CD-ROM Disc

To unload a disc from the Disc Tray, follow these steps:

1. Press and release the eject button on the CD-ROM drive. The disc tray opens approximately 1 inch, as shown in Figure 6–5.

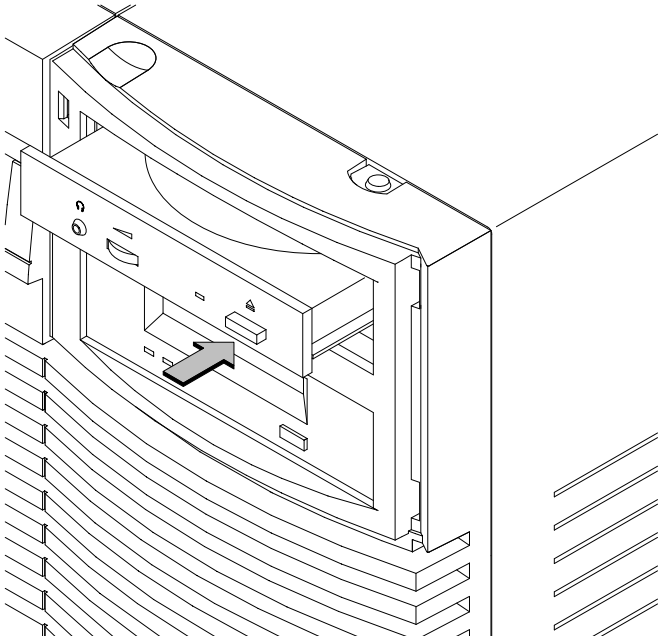


Figure 6–5. CD-ROM Disc Tray Partway Open

2. Gently pull the disc tray fully open.

3. Grasp the disc by the edges and lift it out of the disc tray, as shown in Figure 6–6. Be careful to touch only the edges of the disc.

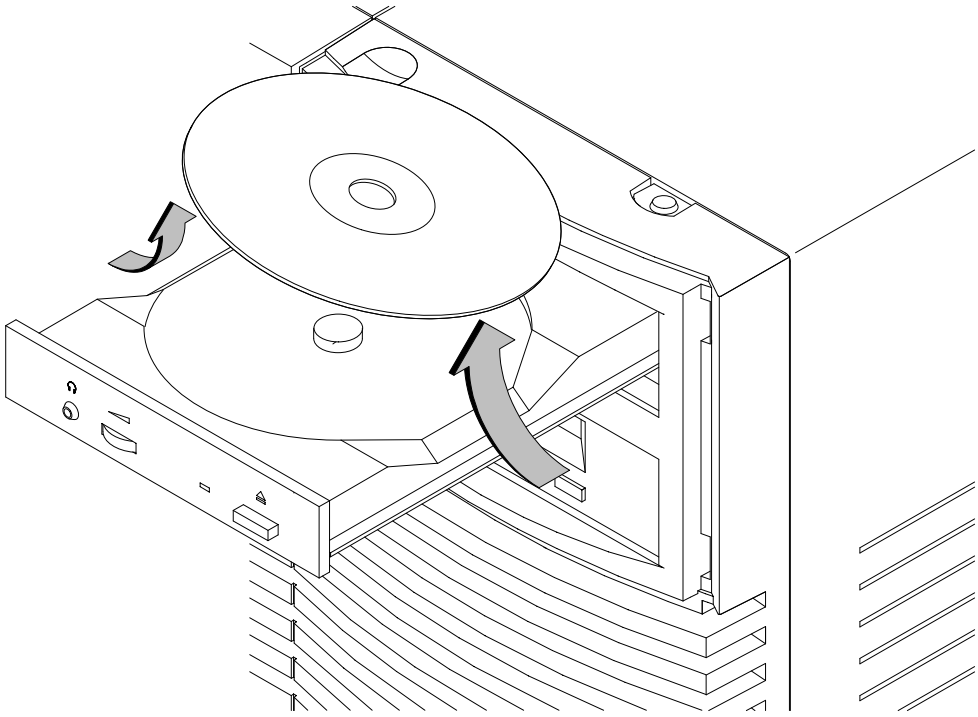


Figure 6–6. Removing the CD-ROM Disc From the Disc Tray

4. Gently push the disc tray in until it is closed, as shown in Figure 6–7.

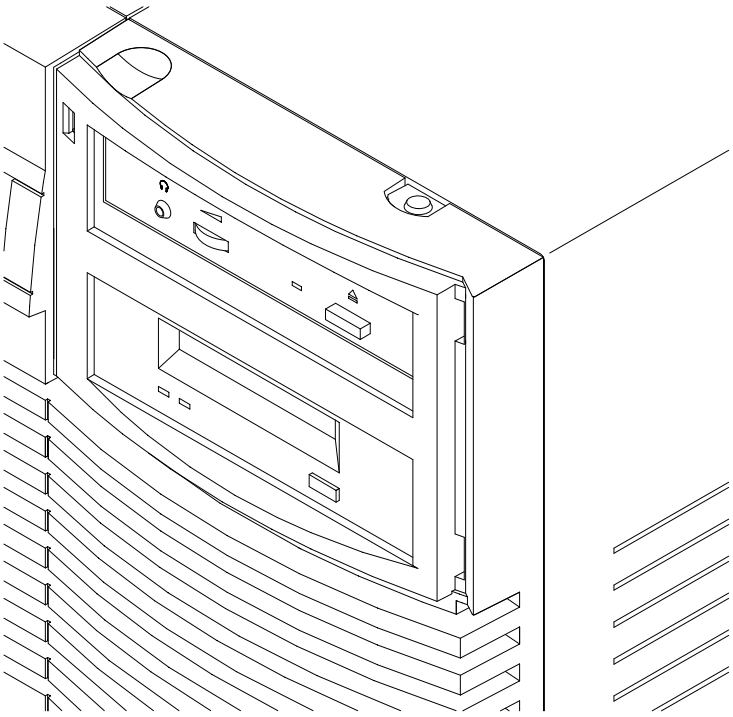


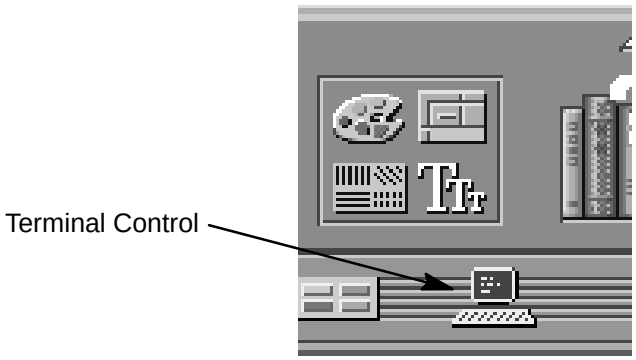
Figure 6–7. Disc Tray Closed

Verifying the CD-ROM Drive Operation

The **ioscan** utility verifies the configuration of all drives.

To verify that your workstation can communicate with the CD-ROM drive, follow these steps:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. If you are using HP-UX 9.05, enter the following at the prompt:

/etc/ioscan –d scsi Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. If there is a SCSI CD-ROM drive in the list, that listing appears similar to the following:

```
H/W Path     Description      Status
=====================================
2.0.1.2.0    cd-rom_drive     ok(nnnnnnnn)
```

If you are using HP-UX 10.0 or later, enter the following at the prompt:

/usr/sbin/ioscan –d sdisk Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
H/W Path    Class                Description
=========================================
            bc
8           bc                   I/O Adapter
8/0             ext_bus          GSC built-in Fast/Wide SCSI Interface
8/0.0              target
8/0.0.0               disk       QUANTUM LPS1080WD
8/0.5              target
8/0.5.0               disk       DEC     DSP3210SW
8/0.6              target
8/0.6.0               disk       DEC     DSP3210SW
8/12            ba               Core I/O Adapter
8/12/5             ext_bus       Built-in SCSI
8/12/5.2              target
8/12/5.2.0               disk    TOSHIBA CD-ROM XM-4101TA
8/12/5.4              target
8/12/5.4.0               disk    SEAGATE ST3600N
8/12/5.6              target
8/12/5.6.0               disk    MICROP  2112
10          bc                   I/O Adapter
10/12           ext_bus          GSC add-on Fast/Wide SCSI Interface
10/12.4            target
10/12.4.0             disk       SEAGATE ST31200W
```

If **ioscan** does not see your CD-ROM drive it returns the following message:

```
ioscan: No hardware found
```

If you receive this message, go to Chapter 6, “Solving Problems.”

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

The examples in this section assume that the SCSI ID of your CD-ROM drive is set to the factory default of SCSI ID 2, using the device file **/dev/dsk/c201d2s0**. (The underlined 2 indicates the SCSI ID number.)

NOTICE: The device file name used in these examples is appropriate only for systems running HP-UX 9.05. If you are using HP-UX 10.0, the device file names will depend on the naming conventions of your particular system. See "SCSI ID and Device File Information for HP-UX 10.0 or Later" in Chapter 1 of this book.

If you set the SCSI address of your CD-ROM drive to a value other than 2, you must create a device file for it, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Mounting and Unmounting a CD-ROM Disc

To access information on a CD-ROM disc, you must first mount the disc. This applies to file system information only. If you wish to load a music CD, for example, you would not need to mount the disc. Mounting a disc with file system information on it gives the disc a pathname that allows your workstation to communicate electronically with it. You must unmount the CD-ROM disc before removing it from the drive.

CAUTION: To use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc **every** time you load it into the drive. You must also unmount the CD-ROM disc **every** time you unload it from the drive. Failure to mount or unmount a disc can cause a system error condition and can also require rebooting the system.

If your workstation is running HP VUE, follow these instructions to mount and unmount a CD-ROM disc as a file system. If you're using something other than HP VUE, use the instructions for mounting and unmounting a CD-ROM disc that come with that product. For more information on configuring your CD-ROM drive, see the *System Administration Tasks* manual or online help.

The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Mounting a CD-ROM Disc Using SAM

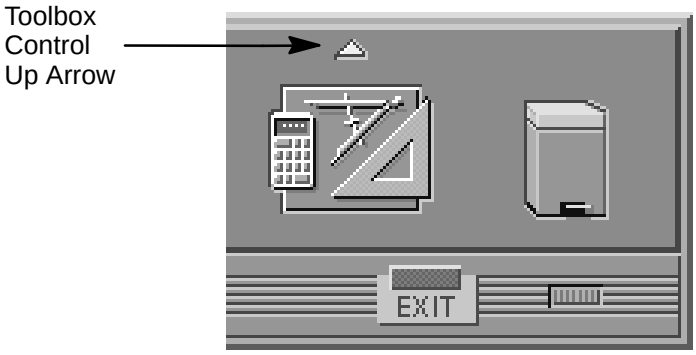
SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

Use the following procedure to mount a CD-ROM disc:

1. Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

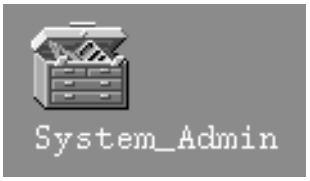
2. Load the CD-ROM disc into the disc tray and gently push the tray into the drive.

3. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button once.



4. The **Toolboxes** subpanel opens. Click on the **General** toolbox icon, shown below.

5. A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.



6. Move the mouse cursor to the **SAM** icon, shown below (your icon can look like either of these), and double-click the left mouse button.

7. The **System Administration Manager** window opens. Double-click on **Peripheral Devices –>.**

8. The **Peripheral Devices** window opens. Double-click on **Disks and File Systems –>.**

9. The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks.**

   The following screen message appears:

   ```
   Scanning the system's hardware...
   ```

   The **CD-ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system. Disks that are unmounted will have the word "unused" in the Use column.

10. From the **Actions** menu, click on **Add a Hard Disk Drive.**

11. The **Select a Disk to Add...** window opens with a list of unused disks. Highlight the CD-ROM disc you want to mount.

12. Click on [OK] .

13. The **Set Disk Usage and Options...** window opens. Select **File System** and click on [OK]..

14. The following screen messages appear:

```
Task started.

Creating the device file...
Mounting file system...
Modifying “/etc/checklist”...
Task completed.
```

Click on [OK]..

Now you can access the CD-ROM disc as you would any other mounted file system.

Unmounting a CD-ROM Disc Using SAM

Use the following procedure to unmount a CD-ROM disc:

NOTICE: Before you unmount a CD-ROM disc, make sure that your working directory (the directory in which a relative path name search begins) is set to some directory other than the one under which the disc was mounted.

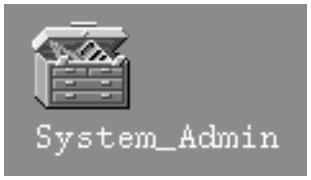
CAUTION: If you wish to use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc **every** time you load it into the drive. You must also unmount the CD-ROM disc **every** time you unload it from the drive. Failure to mount or unmount a disc may cause a system error condition and may also require rebooting the system.

1. Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2. Move the mouse pointer to the **Toolbox** control and click on the **up arrow** with the left mouse button.

3. The **Toolbox** subpanel opens. Place the mouse cursor on the **General** toolbox icon, shown below, and click the left mouse button.

4. A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.



5. Move the mouse cursor to the **SAM** icon, shown below (your icon can look like either of these), and double-click the left mouse button.

6. The **System Administration Manager** window opens. Double-click on **Peripheral Devices –>.**

7. The **Peripheral Devices window** opens. Double-click on **Disks and File Systems –>.**

8. The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks.**

   The following screen message appears:

   ```
   Scanning the system's hardware...
   ```

   The **CD-ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system.

9. Highlight the disc you want to unmount and click on **Remove a Hard Disk Drive** from the Actions menu.

10. Press the eject button on the CD-ROM drive and remove the CD-ROM disc from the disc tray.

11. A window with the following message opens:

    ```
    Do you want to remove the disk?
    ```

    Click on [Yes]. The system reboots.

Reading the Busy Light

The CD-ROM busy light shows the status of the drive during the self test and during activity with the host system.

The CD-ROM drive performs the self test when one of the following happens:

- You load a disc and close the Disc Tray.
- You turn on the workstation with a disc already loaded in the CD-ROM drive.

For the self test, the busy light operates in the following sequence:

1. Light On – The busy light goes on when the disc loads into the drive.
2. Light Flashing – The light flashes six times while a read test is performed on the disc.
3. Light Off – The light goes off when the self test is complete.

The busy light stays on after the self test when one of the following conditions exist:

- A defective disc
- A disc insertion error (for example, an upside-down disc)
- No disc present

The busy light goes off when one of the following conditions exist:

- A CD-ROM drive power failure exists.
- The drive is idle on the SCSI bus.

The busy light flashes during normal activity with the system.

Troubleshooting

If you have trouble with any of these procedures for using your CD-ROM drive, see Chapter 6 of this book, “Solving Problems.”

Chapter 5

Using Your DDS Tape Drive

- DDS tape drive and data cassette descriptions
- Setting the write-protect tab on a data cassette
- Operating the DDS tape drive
- Loading and unloading a data cassette
- Using device files
- Archiving data in compressed and non-compressed mode
- Troubleshooting
- Ordering information

This chapter describes how to perform tasks that archive to and transfer data from the optional DDS tape drive. It also describes how to maintain and care for the drive. We assume the DDS tape drive is set to the factory default address of SCSI ID 3.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

CAUTION: Use only data cassettes labeled DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

DDS Tape Drive and Data Cassette Descriptions

This section describes basic information needed for using your DDS tape drive and data cassettes. Depending on your configuration, your DDS drive may be a DDS-DC drive, or a DDS-2 drive.

NOTICE: In most cases, the information for using these drives is the same; however, in a few instances (such as the LED codes), the information differs for each drive. For the purposes of this discussion, wherever we refer to simply the "DDS" drive, that information is for both drives. Whenever the information differs, we will specify whether the information refers to the DDS-DC or the DDS-2 drive.

DDS Drive

Your DDS tape drive is a 3 1/2-inch form factor DDS tape drive with data compression and a SCSI interface. It conforms to the DDS format standard for storing computer data, and incorporates a data compression capability. It's a high-capacity, high transfer-rate device for data storage on tape.

Controls and Indicators

Figure 5–1 shows the LEDs and eject button of the DDS drive.

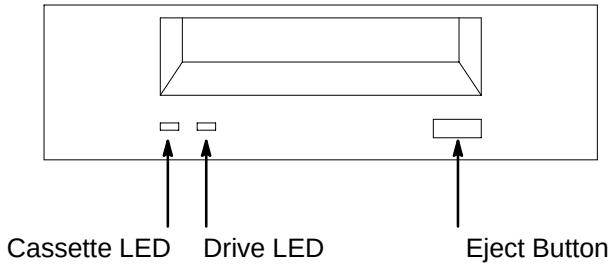


Figure 5–1. DDS Drive Controls and Indicators

LEDs (light emitting diodes) indicate different activities or problems that occur with your workstation hardware

LEDs – DDS-DC Drive

This section describes the LED codes that are displayed.

The front panel has two colored LEDs: the Cassette Light and the Drive Light. A **green** light indicates normal operation, and an **amber** light indicates a warning condition. Pulsing shows activity between the drive and the SCSI bus.

If the Cassette Light (left LED) shows steady amber, it means that the cassette is write-protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Table 5–1 lists the LED codes and their meanings.

Table 5–1. LED Display Codes – DDS-DC Drive

Cassette Light	Drive Light	Meaning
		Cassette (un)loading
		Cassette loaded/online
		Cassette loaded/activity
		Cassette loaded/offline
Write-Protect States		
		Cassette (un)loading
		Cassette loaded/online
		Cassette loaded/activity
		Cassette loaded/offline
Error States		
		Media wear (caution)
		High humidity
		Self-test (normal)
		Self-test (failure)

Key

	OFF
	Green
	Amber
	Pulsing Green
	Pulsing Amber
	Pulsing Green and Amber

LED Warning Conditions – DDS-DC Drive

The following sections describe actions to take if the LEDs indicate a warning condition.

High Humidity

If the LEDs display the high humidity signal, the humidity is too high and the drive does not perform any operations until the humidity drops.

Self-Test (Failure)

If the LEDs display the self-test (failure) signal, a fault was diagnosed during the self tests. Note the pattern of the pulses and contact your local service representative.

Media Wear (Caution)

Hewlett-Packard DDS drives continually monitor the number of errors they have to correct when reading and writing to a tape to determine tape wear and tape head cleanliness. If excessive tape wear or dirty tape heads are suspected, the drive warns you by displaying the Media Wear (Caution) signal on the LED indicators.

If the LED indicators on your DDS-format drive display the Media Wear (Caution) condition, follow this procedure:

1. Check the system console for any tape error messages. A hard error during a read or write operation may have occurred.

2. Clean the heads with a cleaning cassette (HP92283K) as described in the “Cleaning the Tape Heads” section, later in this chapter.

3. Repeat the operation you performed when the Media Wear (Caution) signal displayed. If the Media Wear (Caution) signal still displays, then the data cassette should be replaced.

4. If you are performing a backup from disk to tape, discard the data cassette and back up your files using a new data cassette.

5. If you are performing a restore from tape to disk, complete the restore, then discard the data cassette and back up the files to a new data cassette.

LEDs – DDS-2

The front panel has two colored LEDs: the Tape Light and the Clean/ Attention Light. The Tape Light flashes **green** to show activity (loading, unloading, reading, and writing). Steady green means a cartridge is loaded.

The Clean/Attention Light flashes **amber** to indicate head cleaning is needed or a cartridge is near the end of its life. Steady amber means a hard fault.

Table 5–2. LED Display Codes – DDS-2 Drive

Tape Light	Clean/ Attention	Meaning
		Activity – load or unload
		Activity – read or write
		Cartridge loaded
Any		Cleaning needed
Any		Fault

Key	
	OFF
	Steady Green
	Steady Amber
	Flashing Green 1/2 sec on, 1/2 sec off
	Flashing Amber 1/2 sec on, 1/2 sec off
	Fast Flash Green 1/4 sec on, 1/4 sec off

Data Cassettes

Media Life

HP DDS data cassettes are currently specified to 2000 passes over any part of the tape under optimal environmental conditions (50% relative humidity, 22 degrees C). During a tape operation, any one area of the tape may have multiple passes over the heads. This translates into approximately 200 to 300 backups or restores.

Under certain conditions, the life of your data cassette is less. Replace your data cassettes after 100 backups or restores if your operating conditions meet any of the following criteria:

- The relative humidity in your operating environment is consistently less than 50%.
- You know that the backup software you are using makes multiple passes over sections of the tape during backups or restores.
- You notice that when you do backups and restores the tape stops and starts frequently.

Cleaning the Tape Heads

Clean the heads of your tape drive after every 25 hours of tape drive use or if the Media Wear (Caution) signal is displayed on the LED.

NOTICE: Only use HP Cleaning Cassettes (HP92283K) to clean the tape heads. Do not use swabs or other means of cleaning the tape heads.

Follow this procedure to clean the tape heads:

1. Insert the cleaning cassette into the drive. The tape automatically loads the cassette and cleans the heads. At the end of the cleaning cycle, the drive ejects the cassette.

2. Write the current date on the label on the cleaning cassette so that you know how many times you have used it. Discard the cleaning cassette after you have used it 25 times.

Media Restrictions
If you interchange media between other HP workstation DDS tape drives, note that data cassettes with compressed data can only be read by tape drives that have data compression capabilities. This includes data cassettes that contain both compressed and noncompressed data.

Setting the Write-Protect Tab on a Data Cassette

You can only store or change information on a data cassette when the write-protect tab is in the *write* position. So, before trying to write to the data cassette, make sure that the write-protect tab is in the *write* position, as shown in Figure 5–2.

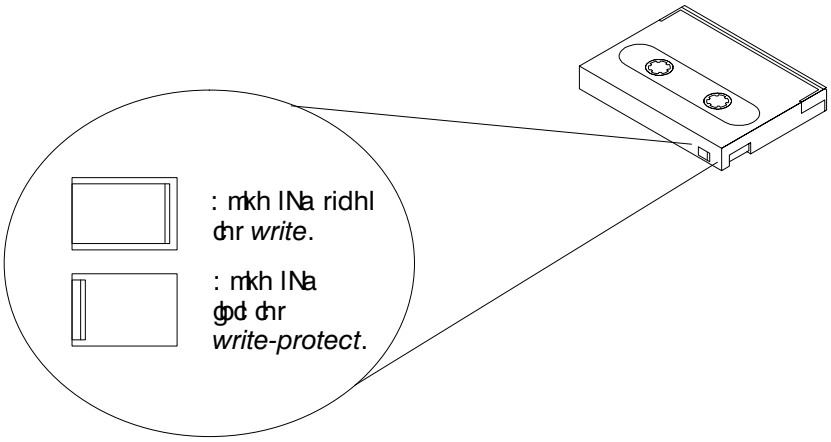


Figure 5–2. Setting the Write-Protect Tab on a DDS Tape

To protect information on a data cassette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 5–2.

NOTICE: The write-protect tab should always be in the *write* position for transferring data to a cassette.

Operating the DDS Tape Drive

This section describes how to perform tasks with your DDS tape drive.

Loading and Unloading a Data Cassette

Follow these steps to load and unload a data cassette in the DDS tape drive:

1. Turn on power to the tape drive.

2. Insert the data cassette into the drive, as shown in Figure 5–3.

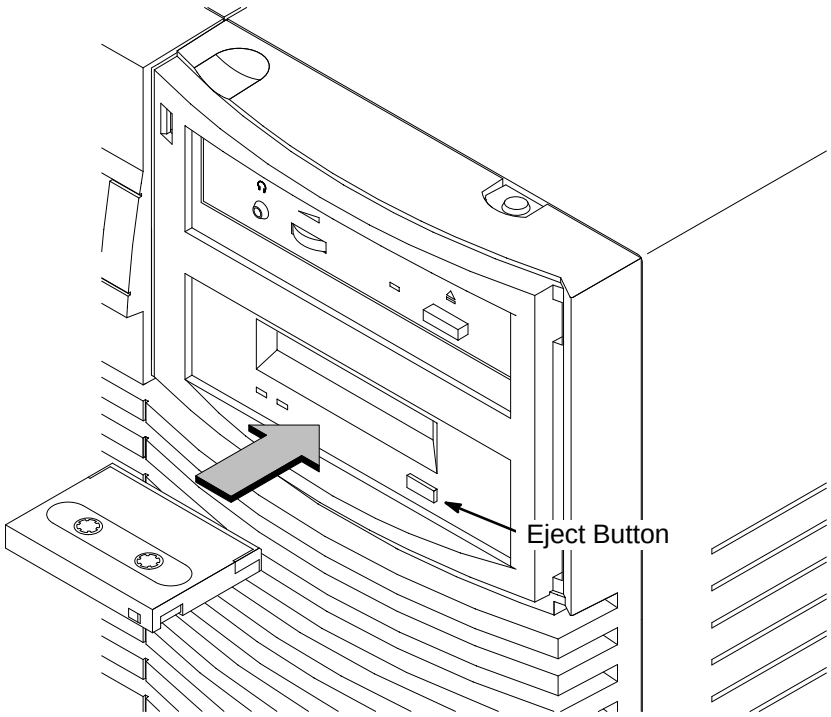


Figure 5–3. Loading a Data Cassette

3. Push the data cassette about three quarters of the way into the drive. The drive automatically pulls the data cassette the rest of the way in. When the LEDs on the front of the drive stop flashing, the drive has loaded the data cassette.

4. To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 5–3. The LEDs on the drive flash on and off. Ten to twenty seconds later, the data cassette slides partway out of the drive. Remove the cassette from the drive.

Verifying the DDS Tape Drive Operation

To verify that your workstation can communicate with the DDS-format tape drive, if you are using HP-UX 9.05, type the following:

/etc/ioscan –d scsi Enter

After a few moments the **ioscan** utility returns a message similar to the following:

```
H/W Path   Description  Status
====================================
2.0.1.3.0  tape_drive   ok(nnnnnnnnn)
```

If you are using HP-UX 10.0 or later, type the following:

/usr/sbin/ioscan –d stape Enter

After a few moments the **ioscan** utility returns a message similar to the following:

```
H/W Path    Class                Description
============================================
            bc
8           bc                   I/O Adapter
8/12            ba               Core I/O Adapter
8/12/5             ext_bus       Built-in SCSI
8/12/5.3              target
8/12/5.3.0               tape    HP      HP35480A
```

If **ioscan** does not see your tape drive it will return the following message:

```
ioscan: No hardware found
```

If you receive this message, go to Chapter 6, “Solving Problems.”

Device files are special files that tell your system which system hardware pathway to use when communicating with a specific device and what kind of device it is.

Using Device Files

Your system has four default device files for use with your tape drive: two device files for noncompressed mode and two device files for compressed mode. If you use these device files, you do not need to create any device files.

If the SCSI address of your tape drive is not set to the factory default of SCSI ID 3, you must create a device file, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

NOTICE: The device file names used in these examples are appropriate only for systems running HP-UX 9.05. If you are using HP-UX 10.0 or later, the device file names will depend on the naming conventions of your particular system. See "SCSI and Device File Information for HP-UX 10.0 or Later" in Chapter 1 of this book.

Device Files — No Data Compression

Your system has two device files for using your tape drive with data compression turned off. The device files are named **/dev/rmt/3m** and **/dev/rmt/3mn**, and are set for SCSI ID 3.

If you use the **/dev/rmt/3m** device file, the tape drive rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3mn** device file, the drive does not rewind the data cassette. The tape stays where it was after the last operation.

If you use these device files, you do not need to create any device files.

Device Files — Data Compression

If you wish to use the data compression feature, use the device files **/dev/rmt/3hc** and **/dev/rmt/3hcn**, which are set for SCSI ID 3.

If you use the **/dev/rmt/3hc** device file, the tape drive compresses the data and rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3hcn** device file, the drive compresses the data, but does not rewind the data cassette. The tape stays where it was after the last operation.

If you use these device files, you do not need to create any device files.

The **tar** (tape file archiver) command saves files to a data cassette, restores files from a data cassette, or lists files on a data cassette.

Archiving Data in Compressed and Noncompressed Mode

This section describes how to transfer data to and from a DDS- format data cassette (saving and restoring) using the HP-UX **tar** command and your tape drive's device file.

NOTICE: Before using your DDS-format tape drive to back up your file system, make sure you read the "Media Interchangeability Restrictions" section later in this chapter.

The **tar** (tape file archiver) command allows you to save files to a data cassette, restore files from a data cassette to your system, or list files on your data cassette.

The examples in this chapter use the device file **/dev/rmt/3m**, which archives the data in noncompressed mode and causes the drive to rewind the data cassette. To use data compression, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**. If you named your device files differently, substitute the correct file name where appropriate.

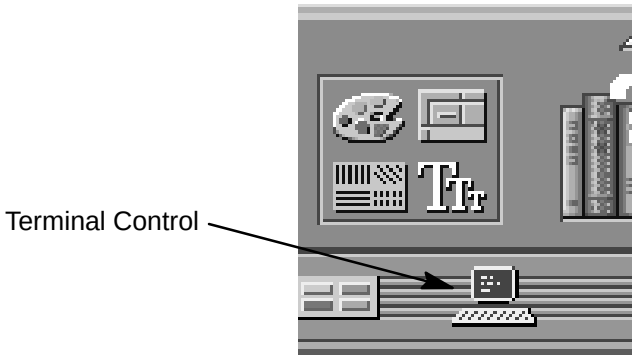
Writing to a Data Cassette

Use the following instructions to save files to a data cassette:

1. Check that the write-protect tab on the data cassette is in the *write* position.

2. Load the data cassette into the tape drive.

3. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



   A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

5. Enter the following command line to write to the tape:

   tar –cvf /dev/rmt/3m *pathname* Enter

   where *pathname* is the pathname of the file or directory containing files that you want to write to the tape. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Restoring Files from a Data Cassette to Your System

Use the following instructions to restore files from a data cassette to your system:

1. Load the data cassette into the tape drive.

2. Use **cd** to change to the directory you want the files to reside in.

3. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

5. Enter the following command line to restore data:

   tar –xvf /dev/rmt/3m *pathname* Enter

   where *pathname* is the pathname of the file or directory containing files that you want to restore from the tape. If *pathname* is not specified, everything on the data cassette is restored. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Listing the Files on a Data Cassette

Use the following instructions to list the files on a data cassette:

1. Load the data cassette into the tape drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

4. Enter the following command line to receive a file listing of the data cassette:

   tar –tvf /dev/rmt/3m Enter

   To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Further Command Information

The **man** utility looks up man pages on the system.

For additional information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following:

man tar Enter

You may also communicate with the tape drive with the **cpio**, **ftio, mt**, and **fbackup** commands. For more information on these commands, enter the following in a terminal window:

man *command* Enter

Media Interchangeability Restrictions

If you interchange media between DDS-format tape drives, the following two restrictions apply to the media:

- Data cassettes with compressed data can only be read by tape drives that have data compression capabilities, such as the tape drive (part number C1504–67201) found in Kit A2275A #AHS.
- Full height (5 1/4-in) DDS-format tape drives (models HP 35470A and HP35480A) can get 1.3 GB and can read or write to 60-meter data cassettes only, if they are not using data compression. With data compression, these drives can get 2 GB and can read or write to 90-meter cassettes.

Troubleshooting

If you have trouble with any of these procedures for using your DDS tape drive, see Chapter 6 of this book, “Solving Problems.”

Ordering Information

To order Hewlett-Packard data cassettes and cleaning cassettes for use in your DDS tape drive, use the following order numbers:

- HP92283A Box of five 60–meter DDS data cassettes
- HP92283B Box of five 90–meter DDS data cassettes
- HP92300A Box of five 120-meter DDS data cassettes (for DDS-2 drive only)
- HP92283K Package of two cleaning cassettes
- HP92283L Lockable storage box for 12 cassettes

CAUTION: Use only data cassettes labeled as DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

Chapter 5

Using Your 3.5-Inch Floppy Disk Drive

- Setting the write-protect tab on a diskette
- Inserting and removing a diskette
- Verifying the floppy disk drive configuration
- Using device files
- Floppy disk drive device file
- Formatting a new diskette
- Transferring data to and from a floppy diskette
- Configuring the floppy driver
- Troubleshooting
- Ordering information

This chapter describes how to perform tasks that allow you to archive to or transfer data from the optional 3.5-inch floppy disk drive.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

NOTICES: When examples of user input are given in this chapter, enter them at the command-line prompt in an HP VUE terminal window or HP-UX shell.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Using the Floppy Diskette

This section describes basic information needed for using your floppy diskettes.

Setting the Write-Protect Tab on a Diskette

You can only store or change information on a diskette when the write-protect tab is in the *write* position. So, before trying to write to the diskette, make sure that the write-protect tab is in the *write* position, as shown in Figure 5–1.

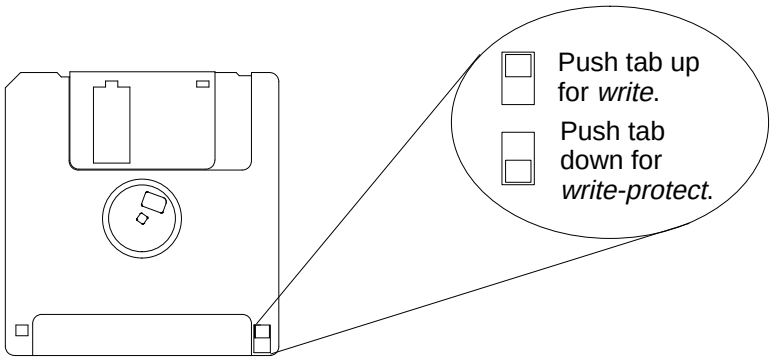


Figure 5–1. Setting the Write-Protect Tab on a Floppy Diskette

To protect files on a diskette from being overwritten, set the write-protect tab to the *write-protect* position.

NOTICE: The write-protect tab should always be in the *write* position for formatting a new diskette and transferring data to a diskette.

Inserting and Removing a Diskette

Follow these steps to insert and remove a diskette from the floppy disk drive:

1. Insert the diskette into the drive, as shown in Figure 5–2.

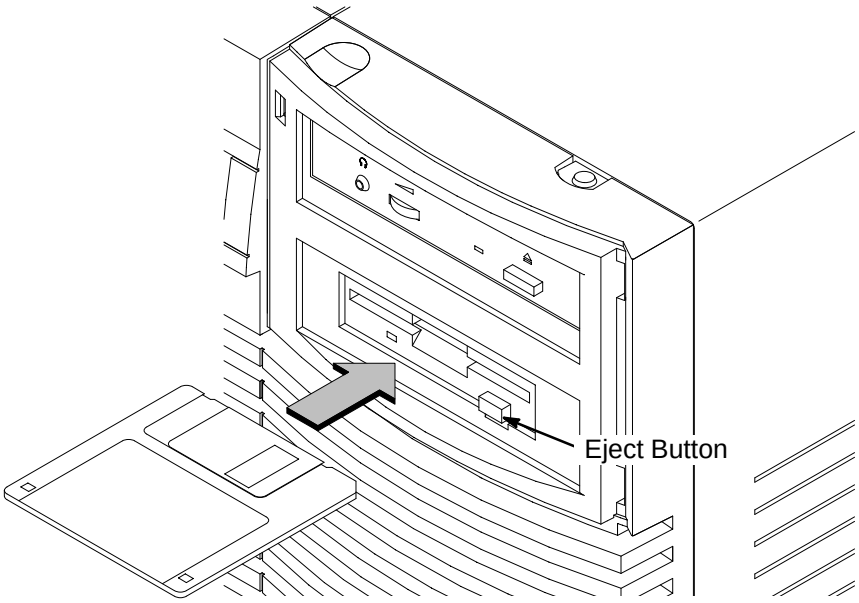


Figure 5–2. Inserting and Removing a Floppy Diskette

2. Push the diskette into the floppy drive until it clicks into place.

3. To remove the diskette, push the eject button (see Figure 5–2), then take out the diskette.

Operating the Floppy Drive

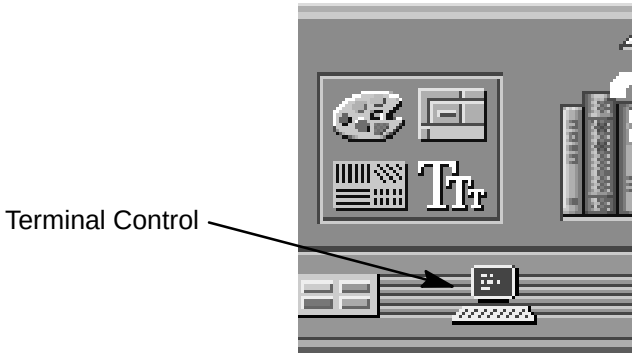
This section describes how to perform tasks with your 3.5-inch floppy disk drive.

Verifying the Floppy Drive Configuration

The **ioscan** utility verifies the configuration of all drives.

To verify that your workstation can communicate with the floppy drive, use the **ioscan** command in a terminal window to see which devices are currently in use on your system:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. If you are using HP-UX 9.05, enter the following at the prompt:

/etc/ioscan –d scsi Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. If there is a SCSI floppy drive in the list, that listing appears similar to the following:

```
H/W Path      Description      Status
============================
2.0.1.0.0     floppy_drive     ok(nnnnnn)
```

If you are using HP-UX 10.0, enter the following at the prompt:

/usr/sbin/ioscan –d sflop Enter

After a few moments the **ioscan** utility lists all of the SCSI floppy I/O devices it could find. The list appears similar to the following:

```
H/W Path    Class                Description
=============================================
            bc
8           bc                   I/O Adapter
8/12            ba               Core I/O Adapter
8/12/5             ext_bus       Built-in SCSI
8/12/5.0              target
8/12/5.0.0               disk    TEAC  FC-1   HF  07
```

If **ioscan** does not see your floppy drive it returns the following message:

```
ioscan: No hardware found
```

If you receive this message, go to Chapter 6, “Solving Problems.”

If the floppy driver is not configured, **ioscan** returns the following message:

```
ioscan: Device driver scsifloppy is not in the kernel
```

If you receive this message, go the the section, “Configuring the Floppy Driver” later in this chapter for information on adding the **scsifloppy** driver to the HP-UX kernel configuration.

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

The examples in this chapter assume that the SCSI ID of your floppy drive is set to the factory default of SCSI ID 0, using the device file **/dev/rfloppy/c201d0s0**. (The underlined 0 indicates the SCSI ID number.)

NOTICE: The device file name used in these examples is appropriate only for systems running HP-UX 9.05. If you are using HP-UX 10.0 or later, the device file names will depend on the naming conventions of your particular system. See “SCSI ID and Device File Information for HP-UX 10.0 or Later” in Chapter 1 of this book.

If you set the SCSI address of your floppy drive to a value other than 0, you must create a device file for it, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Formatting a New Diskette

You must always format a new floppy diskette with the **mediainit** utility before using it. To format a new floppy diskette follow these steps:

1. Log in as **root**.

2. Make sure that the write-protect tab on the floppy diskette is in the *write* position, as shown in Figure 5–1.

3. Insert the diskette into the floppy disk drive.

4. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

5. Move the mouse cursor into the terminal window and click the left mouse button.

6. Execute **mediainit** with an interleave of 2 by entering the following:

   mediainit –i 2 /dev/rfloppy/c201d0s0 Enter

Transferring Data To and From a Floppy Diskette

The **tar** (tape file archiver) command saves files to a floppy diskette, restores files from a floppy diskette, or lists files on a floppy diskette.

This section describes how to transfer data to and from your floppy diskette (saving and restoring) using the HP-UX **tar** command with your floppy drive's device file.

You need to set the write protect tab to the *write* position to transfer data to the diskette. The write-protect tab can be in either position when restoring data from a diskette or listing the files on a diskette.

Saving Files to a Floppy Diskette

Use the following instructions to save files to a floppy diskette:

1. Check that the write-protect tab on the floppy diskette is in the *write* position.

2. Load the formatted floppy diskette into the disk drive.

3. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

4. Move the mouse cursor into the terminal window and click the left mouse button.

5. Enter the following command line to write to the diskette:

   tar –cvf /dev/rfloppy/c201d0s0 *pathname* Enter

   where *pathname* is the pathname of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

Use the following instructions to restore files from a floppy diskette to your system:

1. Load the floppy diskette into the disk drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

4. Use the **cd** command to change to the directory you want the files to reside in:

   cd *directory_path* Enter

   where *directory_path* is the pathname of the directory.

5. Enter the following command line:

   tar –xvf /dev/rfloppy/c201d0s0 *pathname* Enter

   where *pathname* is the pathname of the file or directory containing files that you want to restore from the diskette. If you don't specify *pathname*, everything on the floppy diskette is restored.

Listing the Files on a Floppy Diskette

Use the following instructions to list the files on a floppy diskette:

1. Load the floppy diskette into the disk drive.

2. Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

3. Move the mouse cursor into the terminal window and click the left mouse button.

4. Enter the following command line:

tar –tvf /dev/rfloppy/c201d0s0 Enter

All files on the floppy diskette are listed.

For More Information

The **man** utility looks up man pages on the system.

For more information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following in a terminal window:

man tar Enter

You can mount the floppy drive as a file system using the SAM utility. Be sure to unmount the drive before removing it as a file system. For more information about how to mount and unmount the floppy drive, see the manual *Using HP-UX* (B2910–90001).

For more information on copying data to or from your system to other media, including your floppy diskette, refer to the **cpio** man page by typing the following in a terminal window:

man cpio Enter

For more information on using your floppy disk drive and floppy diskettes, refer to the **floppy** man page by typing the following in a terminal window:

man floppy Enter

For more information on using the **mediainit** command, refer to the **mediainit** man page by typing the following in a terminal window:

man mediainit Enter

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your workstation, you need to reconfigure the HP-UX Kernel to add the floppy driver. Use the SAM utility to add the **SCSI flexible disk** driver and build a new HP-UX kernel.

For more information about how to reconfigure the kernel using SAM, see the following manuals:

- *System Administration Tasks HP 9000 Series 700 Computers* (B2355–90040)
- *Using HP-UX* (B2910–90001)

Troubleshooting

If you have trouble with any of these procedures for using your floppy disk drive, see Chapter 6 of this book, “Solving Problems.”

Ordering Information

To order Hewlett-Packard micro flexible diskettes for use in your 3.5-inch floppy disk drive, use the following order number:

HP–92192X	High-Density Micro Flexible Disks (1.44MB Formatted Capacity) – box of ten diskettes

Chapter 5

Solving Problems

- Common problems and solutions
- Dealing with a boot failure
- Memory failures
- LCD-indicated problems
- Running system verification tests

This chapter contains information to help you determine what's wrong with your system when you have problems. If you have a problem that isn't listed in this chapter, or if your problem persists, contact your designated service representative. When calling for service, always have your system's model number and serial number ready.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

Common Problems and Solutions

The tables in this section list common problems you may encounter with your workstation. The tables also tell you what to do to help solve the problems.

Table 5–1. Problems Powering Up the System

Problem	Solution
The power LED doesn't light.	Make sure all ac power cables are connected securely to the system. Make sure the power cord is plugged into a working ac outlet. Make sure the power switch is set to the ON position.
The power LED lights, but the screen is blank or flickers	Press the brightness control on the monitor to adjust it. If the screen is still blank, turn off the system and monitor power switches. When the system is completely powered off, check the video cable connections. Go to the section "Changing Your Monitor Type" in Appendix B for information about displaying and setting your workstation's monitor configuration.
LCD messages	See "LCD-Indicated Problems" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–2. Problems Loading and Booting the Operating System

Problem	**Solution**
The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.	Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination.)
The system stops or hangs while booting.	Follow the instructions in "Dealing With a Boot Failure," later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–3. Problems with the 802.3 Network

Problem	**Solution**
Can’t reach other systems on the network. Applications that rely on the network won’t run.	Check the network connector on the back of the system unit. Make sure that the network cable or transceiver is fastened securely to the connector.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–4. Problems Using a Hard Disk Drive

Problem	**Solution**
The disk drive is not accessible or does not respond.	Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination.) Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in "Dealing With a Boot Failure" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–5. Problems Using the CD-ROM Drive

Problem	Solution
The CD-ROM drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in the section entitled "Running System Verification Tests" later in this chapter to verify that the CD-ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–6. Problems Using the DDS Tape Drive

Problem	**Solution**
The DDS tape drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that you specified the correct device file name for commands that require a device file name. Make sure the write-protect tab is set to *write* if you are trying to copy data to a data cassette. Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in the section entitled "Running System Verification Tests" later in this chapter to verify that the tape drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 5–7. Problems Using the Floppy Disk Drive

Problem	**Solution**
The floppy drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that you specified the device file **/dev/rfloppy/c201d0s0** for commands that require a device file name. Make sure that the write-protect tab is set to *write* if you are trying to copy data to a floppy diskette. Follow the instructions in the section entitled "Running System Verification Tests" later in this chapter to verify that the floppy drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Dealing with a Boot Failure

If your usual boot device (typically a disk) is not responding as it should, you must try to boot from the disk (or another boot device) by selecting it manually.

To boot a device manually, follow these steps:

1. Follow the directions in "Accessing the Boot Console Interface," in Appendix D of this book.

NOTICE: Your workstation automatically shuts down the operating system before it terminates the power.

2. At the Main Menu prompt, type the following:

```
Main Menu: Enter a command or a menu > search ipl Enter
```

The **search** command looks for bootable media on your workstation.

This causes your workstation to search *exhaustively* for bootable media.

3. Boot from one of the listed devices by typing the following at the prompt:

```
Main Menu: Enter a command or a menu > boot device Enter
```

where *device* is the **hardware path** to the device, specified in mnemonic style notation, such as **scsi.5.0**.

4. If your workstation still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual *Using HP-UX* for help on dealing with file system failures. If you think that something is wrong with the hardware, continue reading this chapter for more troubleshooting information.

Memory Failures

J Class systems use Memory Page Deallocation, a feature that allows the system to provide information to the operating system about memory failures.

HP-UX 10.0 uses Memory Page Deallocation information to map out the failing memory areas, and continue normal operation. You can use the command **memrpt** with the detail switch to obtain information about the Memory Page Deallocation Table (PDT) as well as single bit errors logged by the system.

```
# /usr/sbin/sysdiag   Enter
DUI >logtool   Enter
LOGTOOL> memrpt detail   Enter
```

NOTICE: You must be logged in as superuser to use the **memrpt** command.

To exit the sysdiag and logtool utilities, use the **exit** command.

The pdt can also be checked using the **pdt** command in the Service menu of the boot console handler. If a failing SIMM is replaced, use the Service menu **pdt clear** command to clear out the PDT.

HP-UX 9.05 halts when it detects the presence of bad memory at boot up and displays the following message:

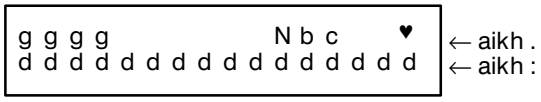
```
ISL booting hpux
Secondary Loader 9000/700
Revision 3.08
Booting /hp-ux
2103692 + 319488 + 309344 start 0x25030


panic: Memory self-test failed
```

LCD-Indicated Problems

Your workstation uses an LCD panel to display firmware/OS progress codes. The codes, referred to as chassis codes, consist of one of the mnemonics listed below, followed by a 4-digit hex number identifying the code module being executed. The mnemonics and their meaning are:

- FLT – A hardware error has been detected
- TEST – Hardware being tested
- INIT – Hardware being initialized
- SHUT – System being shutdown
- WARN – A non-optimal operating condition exists
- RUN – System is running operating system

During a normal boot sequence, a set of “windows” appear. In general, the LCD display has the following format:




```
ZZZZ   ------------> 4 character OSTAT
YYYY   ------------> 4 digit hex code
CPUXX  ------------> Functional CPUs in system
♥      ------------> Heart beat
WWWWWWWWWWWWWWWW-> Text Diagnostic Message
```

The windows are as follows:

Window 1

When the system is hard booted, the LCD will be cleared and the following message will be displayed for approximately 1 second. Then the processor dependent hardware (pdh) is verified.

```
Proceeding To         <- line 1
Turn DC On            <- line 2
```

Window 2

While the pdh is being verified, the following message is displayed:

```
ZZZZ YYYY             <- line 1
Selftest Sys Bd       <- line 2
```

Window 3

After the pdh is verified, the selftest is executed. The display changes to:

```
ZZZZ YYYY     ♥  <- line 1  - '♥' flashes with Z Y field change
Selftest         <- line 2
```

Window 4

When the selftest is complete, the message (once the console is found) is:

```
ZZZZ YYYY CPUXX♥ <- line 1  - '♥' flashes with Z Y field change
AAAAAAAA console <- line 2
```

where AAAAAA is RS-232A, RS-232B, or GRAPHICS.

Window 5

When an attempt to boot is made, the following message is displayed once IPL is successfully loaded and launched:

```
ZZZZ YYYY CPUXX♥ <– line 1  – '♥' flashes with Z Y field change
BBBBBBBBBBBBBBB <– line 2
```

where BBBBBBBBBBBBBBB is the model number (for example, 9000/J200).

If the system encounters an FLT code while the system is booting, the FLT code is interpreted and one of the following messages is displayed:

------- FLT CODE MESSAGES	------- Meaning of X
1. Selftest Sys Bd	
2. Selftest cpu X	(0 or 1)
3. Selftest EISA X	(0 to 4)
4. Selftest SIMM XX	(SIMM pair 0 to 7)
5. Selftest Mem Sys	
6. Selftest Graph X	(0 to 2)
7. Unexp. Trap XX	(0 to 28)
8. HPMC occurred !	

Running System Verification Tests

HP-UX uses a diagnostics product called the Support Tools Manager that allows system operation verification.

You can access the Support Tools Manager in a terminal window. If you are using HP VUE as your interface, you can also access the Support Tools Manager through the **sys_admin** directory.

Three interfaces are available with the Support Tools Manager: a command line interface (accessed through the **cstm** command), a menu-driven interface (accessed through the **mstm** command), and the graphical user interface (accessed through the **xstm** command).

For more information on these user interfaces, see the online man pages by entering the following at a command line prompt:

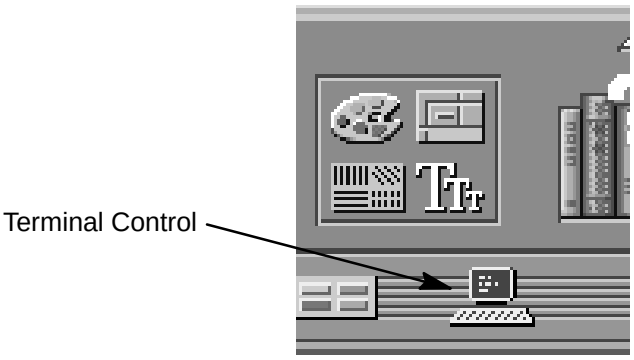
man cstm Enter

man mstm Enter

man xstm Enter

To access the Support Tools Manager, perform the following steps:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.

3. Enter the following at the prompt:

   cstm Enter

   The following screen appears:

```
Support Tool Manager     Version A.01.00

Type 'help' for a list of available commands.

CSTM>
```

   At the CSTM> prompt, you can enter several commands. To see what commands are available, type the **help** command.

4. To verify the system operation, type the following at the CSTM> prompt:

   CSTM> **verify all** Enter

   Messages similar to the following appear:

```
Verification has started on device (CPU).
Verification has started on device (FPU).

CSTM>Verification of (FPU) has completed.
CSTM>Verification of (CPU) has completed.
```

5. Press Enter to return to the CSTM> prompt after all test results are reported.

6. To exit the Support Tools Manager, type the following:

```
CSTM> exit Enter
```

If any tests failed, further diagnosis is necessary by qualified service personnel. Contact your designated service representative.

Appendix A

Changing Your Workstation's Hardware Configuration

- Checking the SCSI IDs
- Opening the system unit
- Closing the system unit
- Installing removable media devices
- Adding a hard drive
- Installing additional memory
- Adding a second processor
- Installing an EISA or graphics board
- Changing your monitor type

This appendix describes the procedures to change your workstation's hardware configuration.

The instructions in this appendix assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

CAUTION: Always wear a properly grounded wrist strap when reconfiguring your workstation.

Use the following tools to remove or replace hardware parts when changing your configuration:

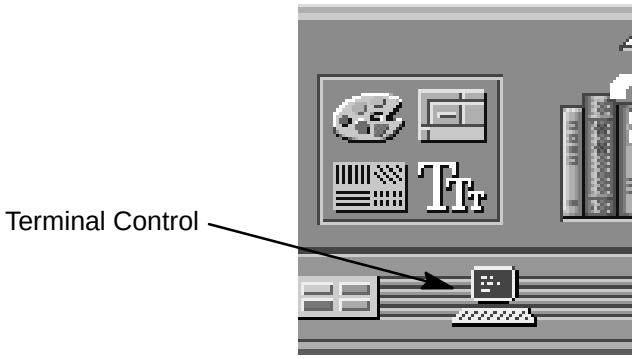
- Light-duty flat blade screwdriver with 150 mm (6 in.) blade
- Number 1 Posi-drive driver
- Needlenose pliers

Also, read the ESD Precautions in Appendix A of this guide.

Checking the SCSI IDs

To determine which SCSI IDs are currently in use on your system, use the **ioscan** command in a terminal window:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and single-click the left mouse button.

3. If you are using HP-UX 9.05, enter the following at the prompt:

/etc/ioscan –d scsi Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list should appear similar to the following:

```
H/W Path      Description      Status
===================================
2.0.1.2.0     cd-rom_drive     ok(nnnnnnnn)
```

If you are using HP-UX 10.0 or later, enter the following at the prompt:

/usr/sbin/ioscan –f Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
Class       I  H/W Path       Driver      S/W State H/W Type  Description
===================================================================
bc          0                  root        CLAIMED   BUS_NEXUS
bc          1  8               ccio        CLAIMED   BUS_NEXUS I/O Adapter
ext_bus     0  8/0             c720        CLAIMED   INTERFACE GSC built-in Fast/Wide SCSI Interface
target      0  8/0.0           tgt         CLAIMED   DEVICE
disk        3  8/0.0.0         sdisk       CLAIMED   DEVICE    QUANTUM LPS1080WD
target      1  8/0.5           tgt         CLAIMED   DEVICE
disk        2  8/0.5.0         sdisk       CLAIMED   DEVICE    DEC     DSP3210SW
target      2  8/0.6           tgt         CLAIMED   DEVICE
disk        0  8/0.6.0         sdisk       CLAIMED   DEVICE    DEC     DSP3210SW
ba          0  8/12            bus_adapter CLAIMED   BUS_NEXUS Core I/O Adapter
ext_bus     2  8/12/0          CentIf      CLAIMED   INTERFACE Built-in Parallel Interface
audio       0  8/12/1          audio       CLAIMED   INTERFACE Built-in Audio
tty         0  8/12/4          asio0       CLAIMED   INTERFACE Built-in RS-232C
ext_bus     1  8/12/5          c700        CLAIMED   INTERFACE Built-in SCSI
target      3  8/12/5.2        tgt         CLAIMED   DEVICE
disk        1  8/12/5.2.0      sdisk       CLAIMED   DEVICE    TOSHIBA CD-ROM XM-4101TA
target      4  8/12/5.3        tgt         CLAIMED   DEVICE
tape        0  8/12/5.3.0      stape       CLAIMED   DEVICE    HP      HP35480A
target      5  8/12/5.4        tgt         CLAIMED   DEVICE
disk       10  8/12/5.4.0      sdisk       CLAIMED   DEVICE    SEAGATE ST3600N
target      6  8/12/5.6        tgt         CLAIMED   DEVICE
disk        5  8/12/5.6.0      sdisk       CLAIMED   DEVICE    MICROP  2112
lan         0  8/12/6          lan2        CLAIMED   INTERFACE Built-in LAN
ps2         0  8/12/7          ps2         CLAIMED   INTERFACE Built-in Keyboard/Mouse
bc          2  10              ccio        CLAIMED   BUS_NEXUS I/O Adapter
graphics    0  10/0            graph3      CLAIMED   INTERFACE Graphics
graphics    1  10/8            graph3      CLAIMED   INTERFACE Graphics
ext_bus     3  10/12           c720        CLAIMED   INTERFACE GSC add-on Fast/Wide SCSI Interface
target      7  10/12.4         tgt         CLAIMED   DEVICE
disk        6  10/12.4.0       sdisk       CLAIMED   DEVICE    SEAGATE ST31200W
graphics    2  10/16           graph3      CLAIMED   INTERFACE Graphics
ba          1  10/20           bus_adapter CLAIMED   BUS_NEXUS Core I/O Adapter
hil         0  10/20/1         hil         CLAIMED   INTERFACE Built-in HIL
tty         1  10/20/2         asio0       CLAIMED   INTERFACE Built-in RS-232C
ba          2  10/20/5         eisa        CLAIMED   BUS_NEXUS EISA Bus Adapter
ext_bus     4  10/20/5/3       hshpib      CLAIMED   INTERFACE EISA card HWP0C70
target      8  10/20/5/3.0     tgt         CLAIMED   DEVICE
disk        7  10/20/5/3.0.0   cs80        CLAIMED   DEVICE    disk 07959
target      9  10/20/5/3.1     tgt         CLAIMED   DEVICE
disk        8  10/20/5/3.1.0   cs80        CLAIMED   DEVICE    disk 07959
target     10  10/20/5/3.2     tgt         CLAIMED   DEVICE
disk        9  10/20/5/3.2.0   cs80        CLAIMED   DEVICE    disk 07959
processor   0  32              processor   CLAIMED   PROCESSOR Processor
processor   1  34              processor   CLAIMED   PROCESSOR Processor
memory      0  49              memory      CLAIMED   MEMORY    Memory
```

4. If you are using HP-UX 9.05, you can determine which SCSI IDs are currently in use by looking under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.6.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

The information is presented in a different format if you are using HP-UX 10.0 or later; although you still look under the **H/W Path** heading.

NOTICE: Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Opening the System Unit

Perform the following steps to open the system unit:

1. Power off the system, the monitor, and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets. Refer to *Using Your HP Workstation* for the proper method of shutting down your workstation.

2. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the back panel of the system unit.

3. Press down on the two buttons on the top front of the workstation, releasing the front panel (also known as the front bezel) as shown in Figure A–1.

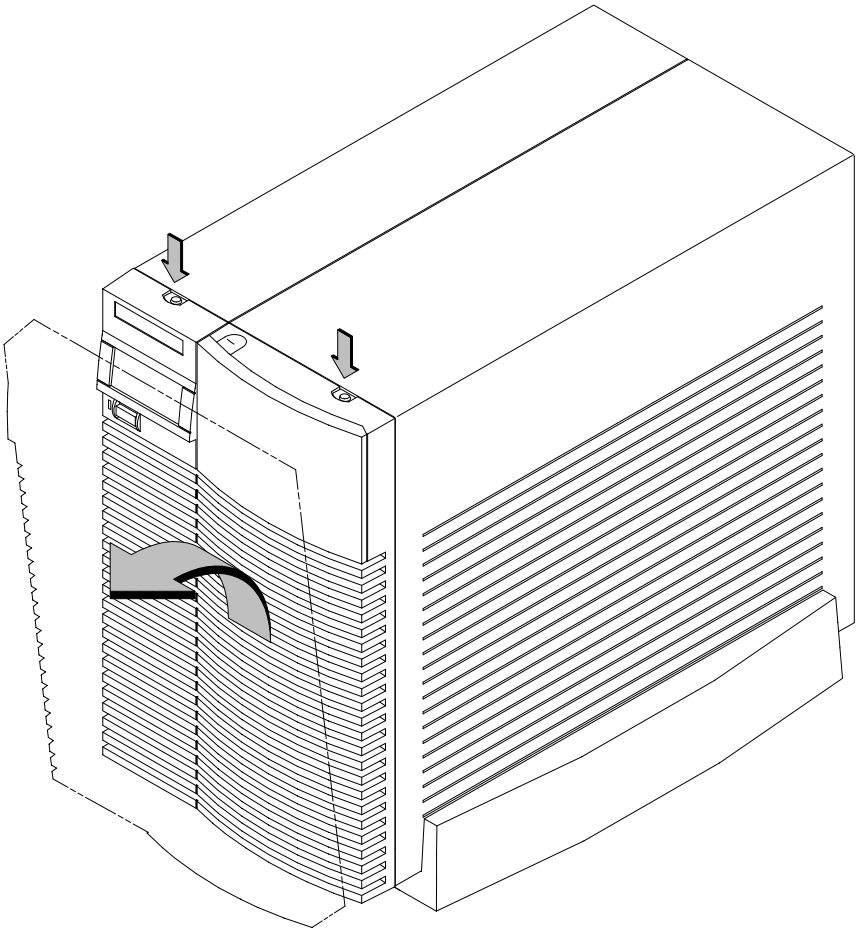


Figure A–1. Removing the Front Panel

4. Swing the panel down and pull up slightly so the two guide pins on the bottom clear their guides and lay the front cover down.

Closing the System Unit

Perform the following steps to close the system unit:

CAUTION: **Do not** attempt to operate the workstation with the front cover removed. The cover is needed for proper air flow for system cooling.

1. Insert the two guide pins on the bottom of the front cover into the guides on the bottom of the system unit.

2. Swing the front cover up, and push it firmly into the workstation housing. The front panel edges automatically align with the workstation housing, and the top latch buttons pop up into position. See Figure A–2.

NOTICE: To maintain FCC/EMI compliance, verify that the top latches snap completely into position.

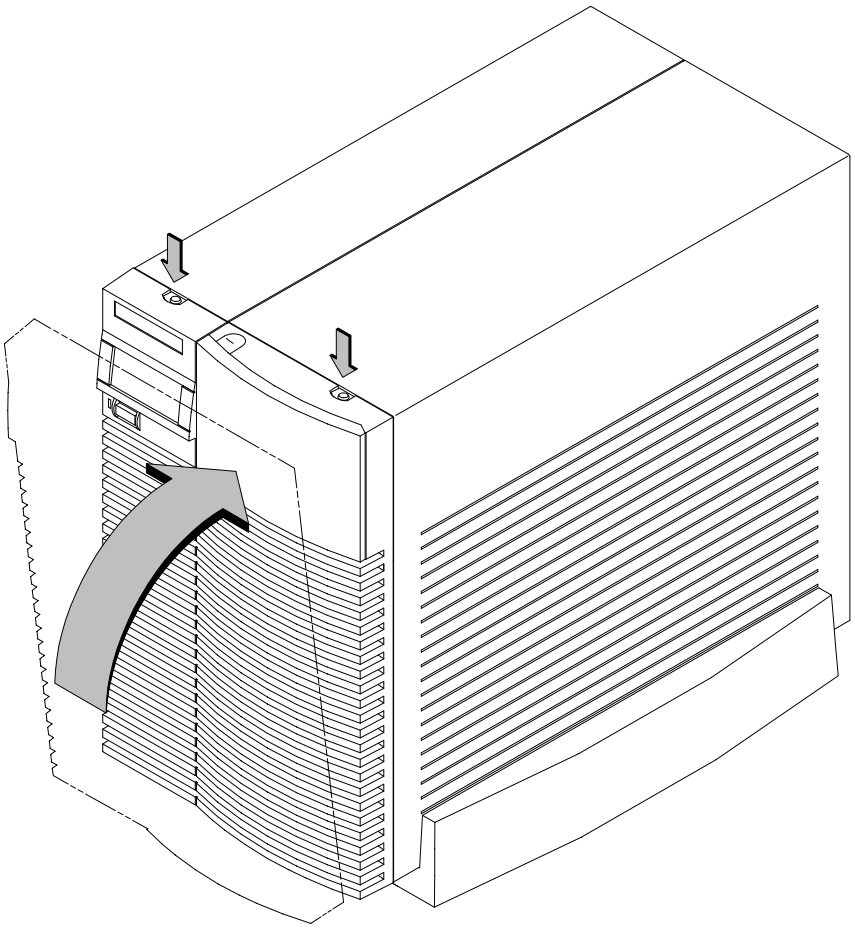


Figure A–2. Replacing the Front Panel

3. Reconnect the power cables and any other cables that you disconnected when opening the workstation, then power on any peripherals, the monitor, and the system unit.

Installing Removable Media Devices

Your workstation can have any two of the following removable media devices, with no two the same:

- CD-ROM drive
- 2 to 8 GB, 4 mm DDS tape drive
- 3.5-inch Floppy disk drive

Follow these steps for installing any of the removable media drives into the Storage Assembly. The steps for checking and setting drive jumpers are different for each drive. Jumper information for each drive is included in these steps.

NOTICE: Before opening the system unit, follow the instructions in "Checking the SCSI IDs," earlier in this appendix, to determine the SCSI IDs currently in use on your workstation.

1. Open the system unit according to the directions in "Opening the System Unit," earlier in this appendix.

2. Unscrew the two captive screws on the left side of the Storage Assembly and pull down the drawer ejector handle on the right side of the Storage Assembly, as shown in Figure A–3.

The Storage Assembly slides partway out of the drawer.

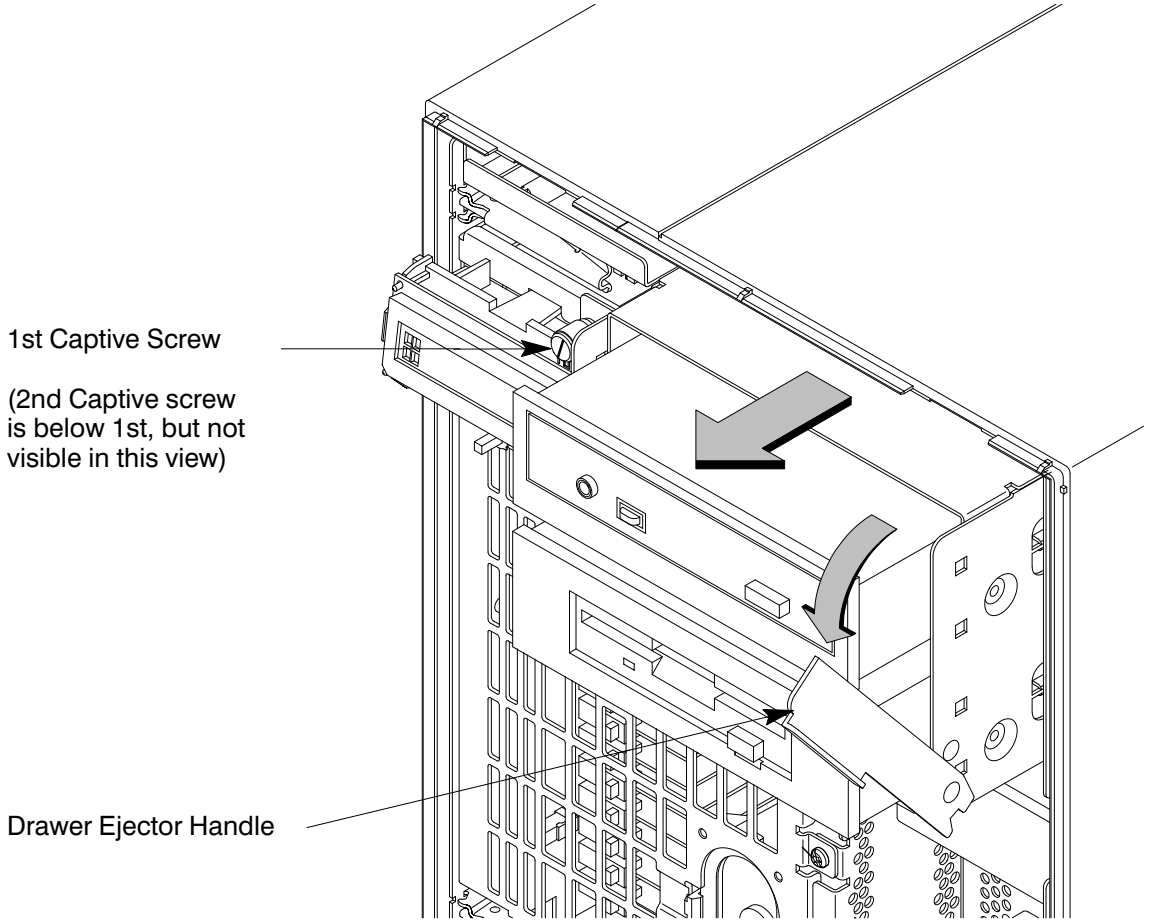


Figure A–3. Removing Storage Drawer from System Unit

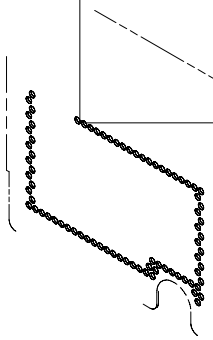
3. Pull the Storage Assembly out as far as it will go. (A safety catch prevents the drawer from coming all the way out.)

NOTICE: When sliding the Storage Assembly out of the system unit, move the drawer ejector handle to prevent the Storage Assembly from hitting it.

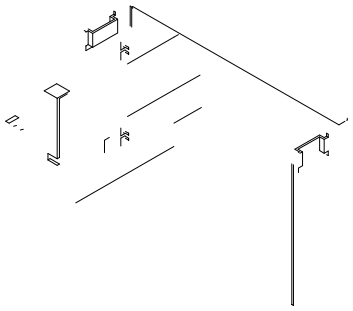
4. Push in on the safety catch and continue pulling the drawer out. Be sure to support the drawer from the bottom.

5. Set the drawer on a flat surface.

6. Unscrew the captive screw holding the EMI plate at the back of the removable drives and lift the plate up and out of the drawer, as shown in Figure A–4.



8. Unscrew the two screws holding the drive in the storage drawer, and slide the drive out of the drawer. See Figure A–5.*Figure A–5. Removing Drive Screws***9.**



CD-ROM Drive

The CD-ROM drive ships with the drive set to SCSI ID address 2. We recommend keeping the address setting at 2 unless it is used by another device.

CAUTION: CD-ROM drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the CD-ROM drive kit. Always handle the drive carefully.

If you need to change the CD-ROM drive's address, follow these instructions, referring to Figure A–6. If you do not need to change the drive's address, go to Step 10 of this installation procedure.

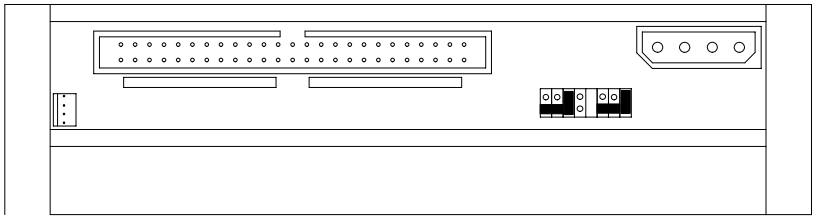
1. Locate the jumpers at the back of the CD-ROM drive.

2. To change the address, use needlenose pliers to set the drive's SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

NOTICE: Do not use SCSI ID 7 for your CD-ROM drive's SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive.

Rear View



SCSI ID Address	Jumpers ID 1	ID 2	ID 4
0			
1			○ ○
2		■	○ ○
3			○ ○
4	○ ○		
5			
6	○ ○	■	■
7			

DDS Tape Drive

The DDS tape drive ships with the drive set to SCSI ID address 3 and the Operation Mode switches set for correct drive operation. We recommend keeping the address setting at 3 unless it is used by another device.

CAUTION: SCSI tape drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the DDS tape drive kit. Always handle the drive carefully.

If you need to change the DDS tape drive's address or operation mode, follow these instructions, referring to Figure A–7 for the DDS-DC drive, Figure A–8 for the DDS-2 drive, and Figure A–9 for operation mode. If you do not need to change the drive's address or operation mode, go to Step 10 of this installation procedure.

1. Locate the jumpers at the back of the DDS tape drive.
2. To change the jumper settings, use needlenose pliers to set the drive's SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

NOTICE: Do not use SCSI ID 7 for your DDS tape drive's SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive.
4. If you need to change the Operation Mode switches, locate the switches on the underside of the DDS tape drive. Switches 1 and 2 are used to configure the data compression operation mode. Switches 3 through 8 are used to specify drive connectivity and functionality according to host or customer requirements. The default setting is all switches ON. Figure A–9 shows the available options.

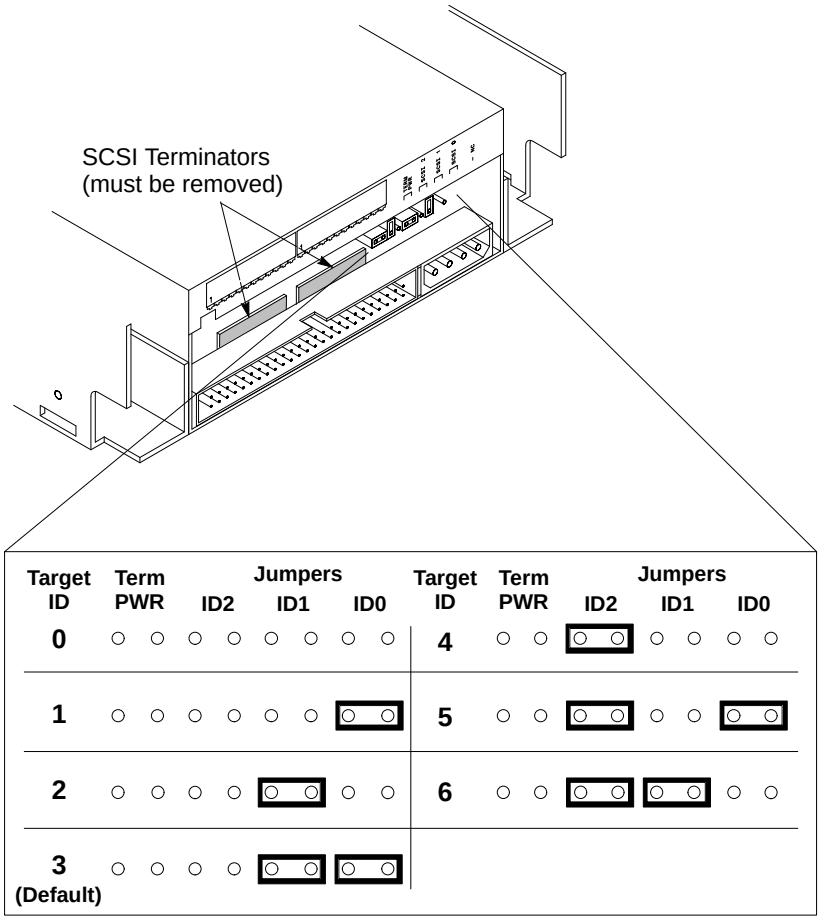
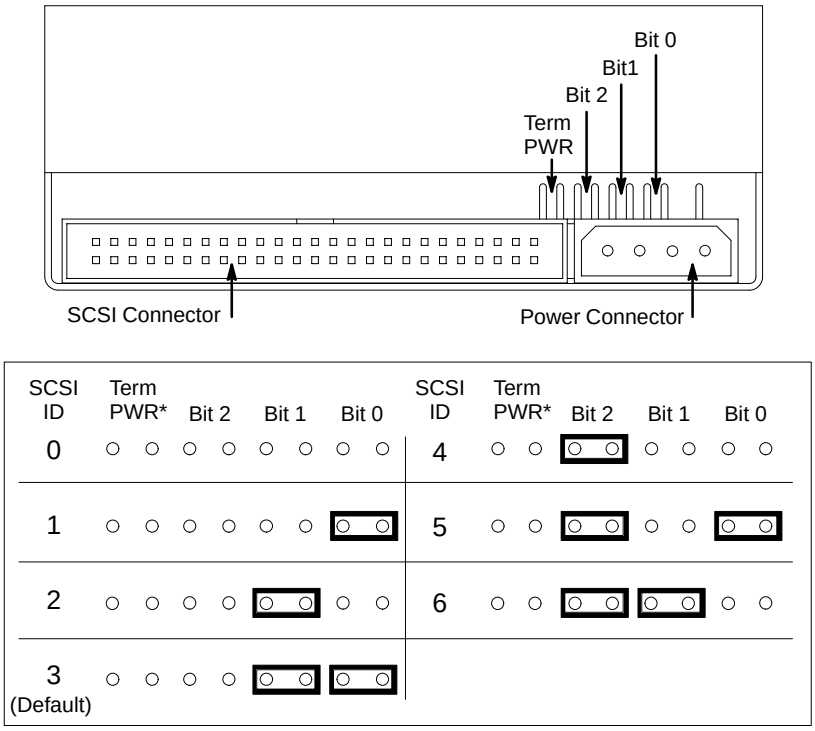


Figure A–7. DDS-DC Tape Drive SCSI Address/Jumper Settings



*Term PWR is not used in HP workstation configurations.

Figure A–8. DDS-2 Tape Drive and SCSI Address/Jumper Settings

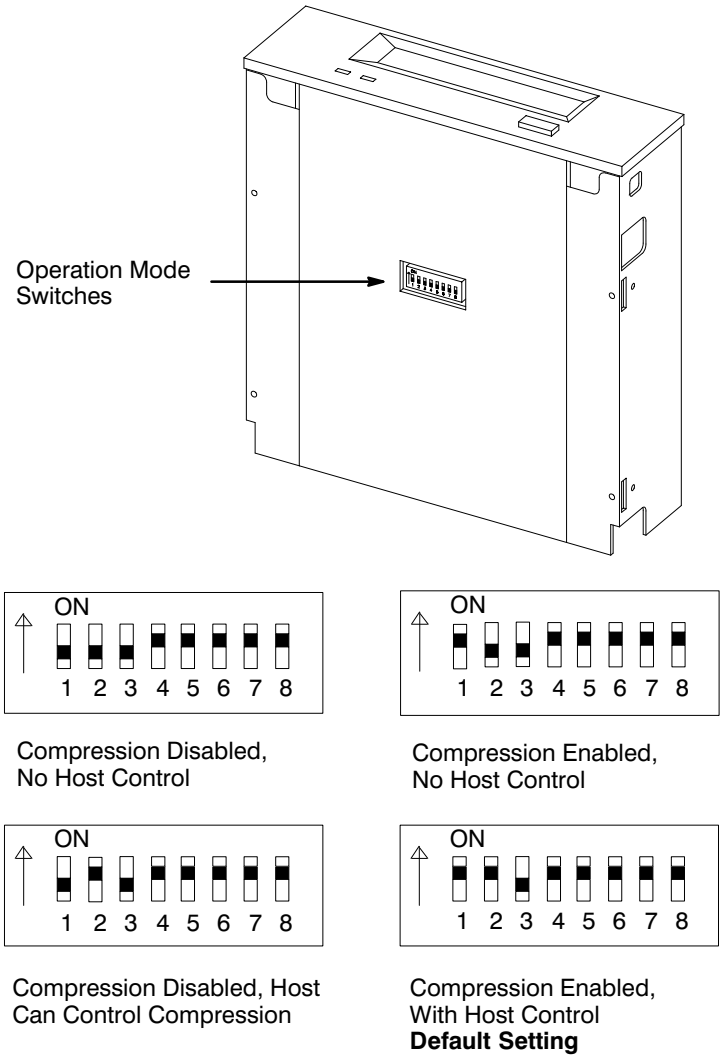


Figure A–9. Switch Settings for Data Compression Operation Mode

Floppy Drive

The floppy disk drive ships with the drive set to SCSI ID address 0. We recommend keeping the address setting at 0 unless it is used by another device.

CAUTION: Floppy disk drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy disk drive kit. Always handle the drive carefully.

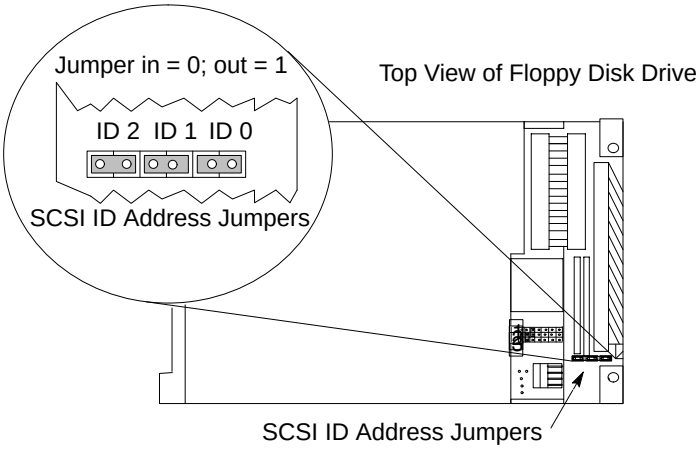
If you need to change the floppy disk drive's address, follow these instructions, referring to Figures A–10 and A–11. If you do not need to change the drive's address, go to Step 10 of this installation procedure.

1. Locate the jumpers on the top of the floppy drive.

2. To change the jumpers, use needlenose pliers to set the drive's SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

NOTICE: Do not use SCSI ID 7 for your floppy drive's SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive.



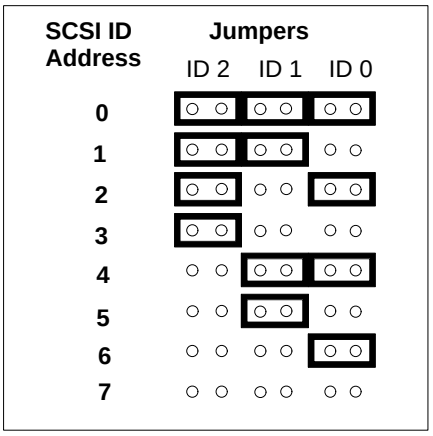


Figure A–10. Floppy Drive SCSI Address/Jumper Settings

Top View of Floppy Disk Drive

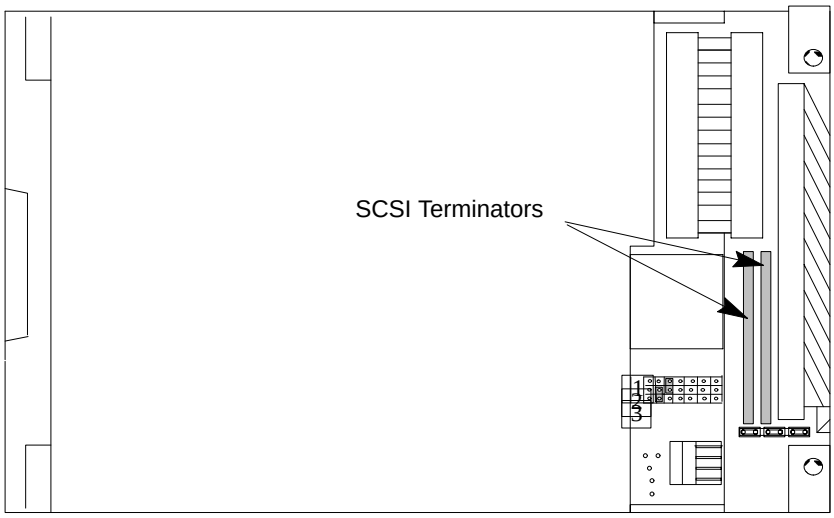
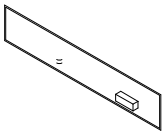


Figure A–11. Floppy Drive Terminators

10. Figure A–12 shows the orientation of each of the removable media drives in the bracket and the position of the screws holding the drive bracket in place. The same bracket can be used on all three drives.



11. With the disk mounting bracket between the guides on each side of the Storage Assembly, slide the disk into the Storage Assembly, securing it with the two side screws. See Figure A–13. Do not over-tighten the side screws.

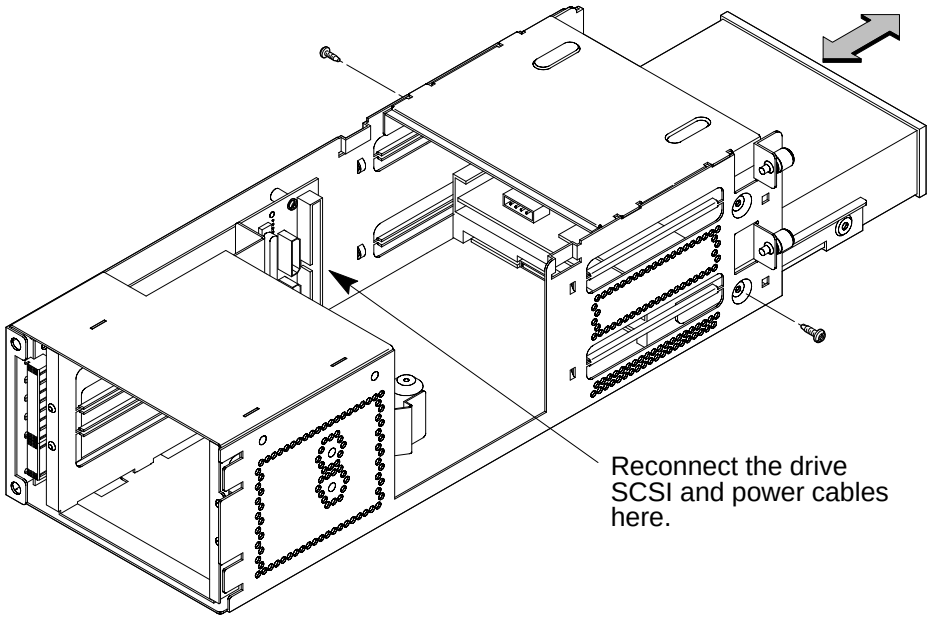


Figure A–13. Replacing Drive Screws

12. Reconnect the cabling from the back of the drive to the side of the drawer assembly. See Figure A–13.

13. Secure the EMI plate at the back of the removable drives with the captive screw in the bottom of the plate.

14. Slide the drawer back in.

15. Push the drawer ejector handle up until the Storage Assembly slides all the way into the system unit and secure the two captive screws on the left of the Storage Assembly, as shown in Figure A–14.

NOTICE: If the ejector handle is not pushed completely in, you may not have proper seating of the SCSI PCB interconnect to the backplane.

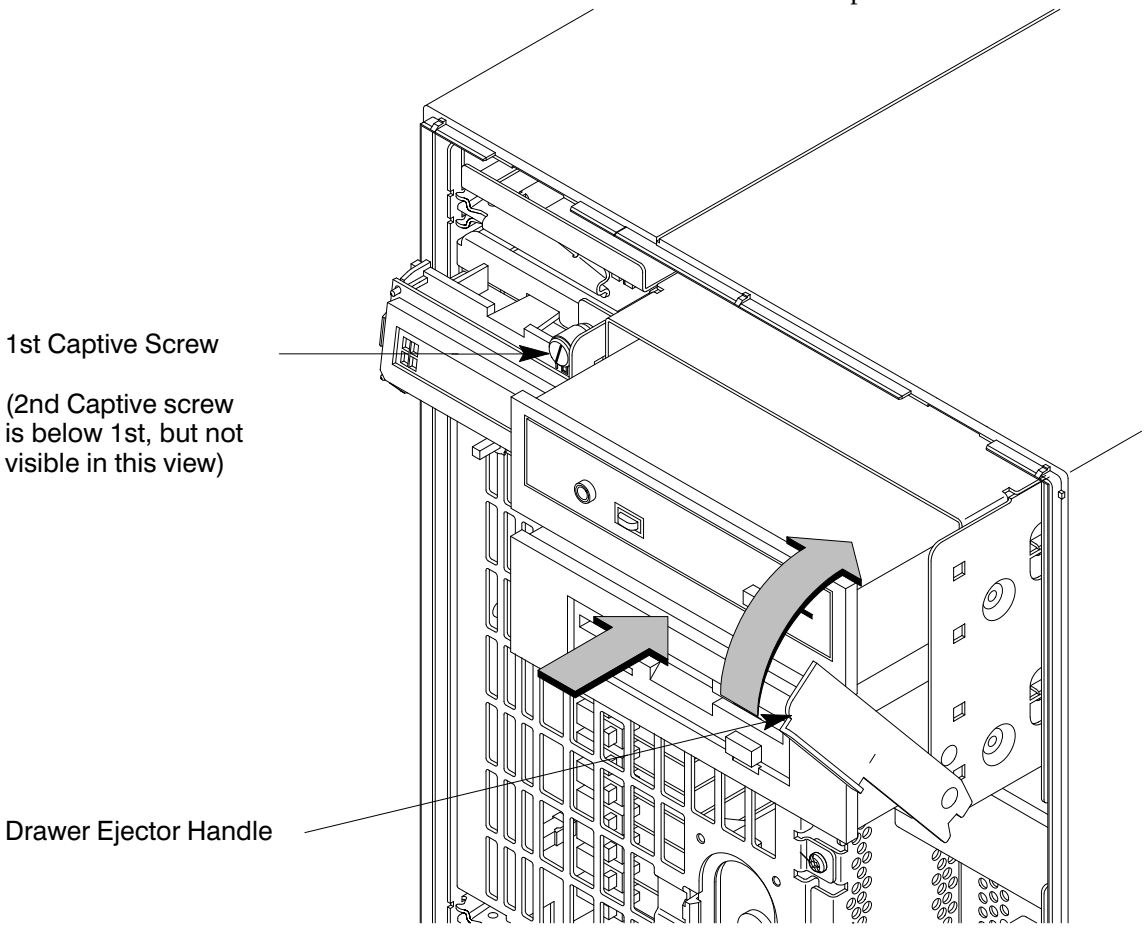


Figure A–14. Replacing the Storage Drawer Assembly

16. Follow the instructions in “Checking the SCSI IDs” earlier in this appendix, to verify that your workstation can see the newly installed drive.

For information about using your drives see the following chapters in this book:

- Using your CD-ROM drive is in Chapter 3.
- Using your DDS tape drive is in Chapter 4.
- Using your floppy drive is in Chapter 5.

Adding a Hard Drive

This section describes how to add a hard drive to your workstation. The first part deals with installing a hard drive and the second part tells you how to configure your hard disk after it is installed.

Your workstation can have two hard drives. The hard drive that came with your workstation was set to SCSI ID 6. If you are adding a second hard disk, the second hard disk will use SCSI ID 5. If another device on your workstation is using SCSI ID 5, change the hard disk's SCSI ID to an unused SCSI ID.

NOTICE: Do not use SCSI ID 7 for your hard drive's SCSI address. The host SCSI controller uses SCSI ID 7. If you are adding a second hard drive, we advise you not to use SCSI ID 6 which is normally reserved for the boot disk drive.

Check the jumpers on the hard drive you plan to install. Figure A–15 shows the correct SCSI address for the jumpers on your drive. These jumpers are the only jumpers you may need to change on the drive.

1. Use a pair of small needle-nose pliers to set the SCSI ID jumpers to SCSI ID 5 if you are adding a second hard drive, or SCSI ID 6 if this is the first hard drive (you are running diskless). Check that the other jumpers are set correctly.

2. If you removed the disk drive mounting bracket from the disk drive, replace it now, making sure not to over-tighten the screws. Figure A–16 shows the orientation of the drive in the bracket for both drives and the position of the screws holding the drive bracket in place.

   Be sure the printed circuit side of one drive is facing the printed circuit side of the other drive.

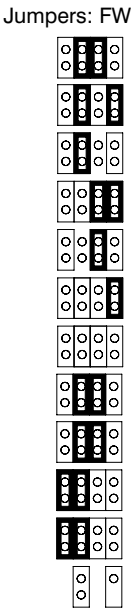


Figure A–15. Fast, Wide Hard Drive Jumper Settings

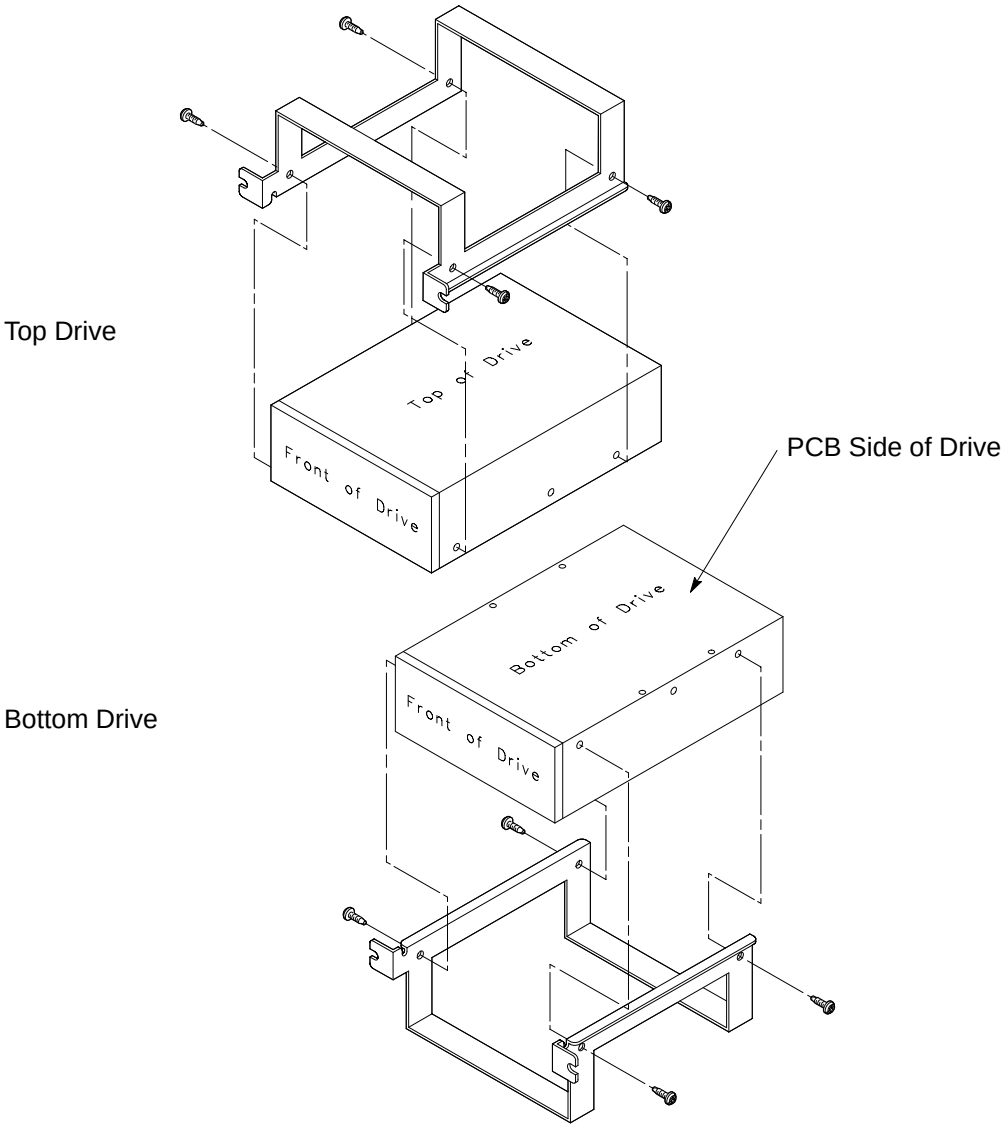


Figure A–16. Replacing Hard Drive Mounting Bracket and Drive Orientation

Installing a Hard Disk Drive

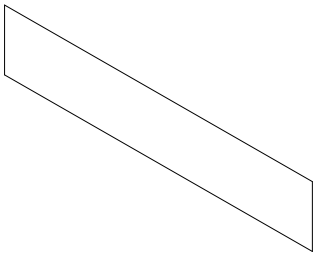
Perform the following steps to install a hard disk drive.

NOTICE: Before opening the system unit, follow the instructions in "Checking the SCSI IDs," earlier in this appendix, to determine the SCSI IDs currently in use on your workstation.

1. Open the system unit according to the directions in "Opening the System Unit," earlier in this appendix.

2. Unscrew the two captive screws on the left side of the Storage Assembly and pull down the drawer ejector handle on the right side of the Storage Assembly, as shown in Figure A–17.

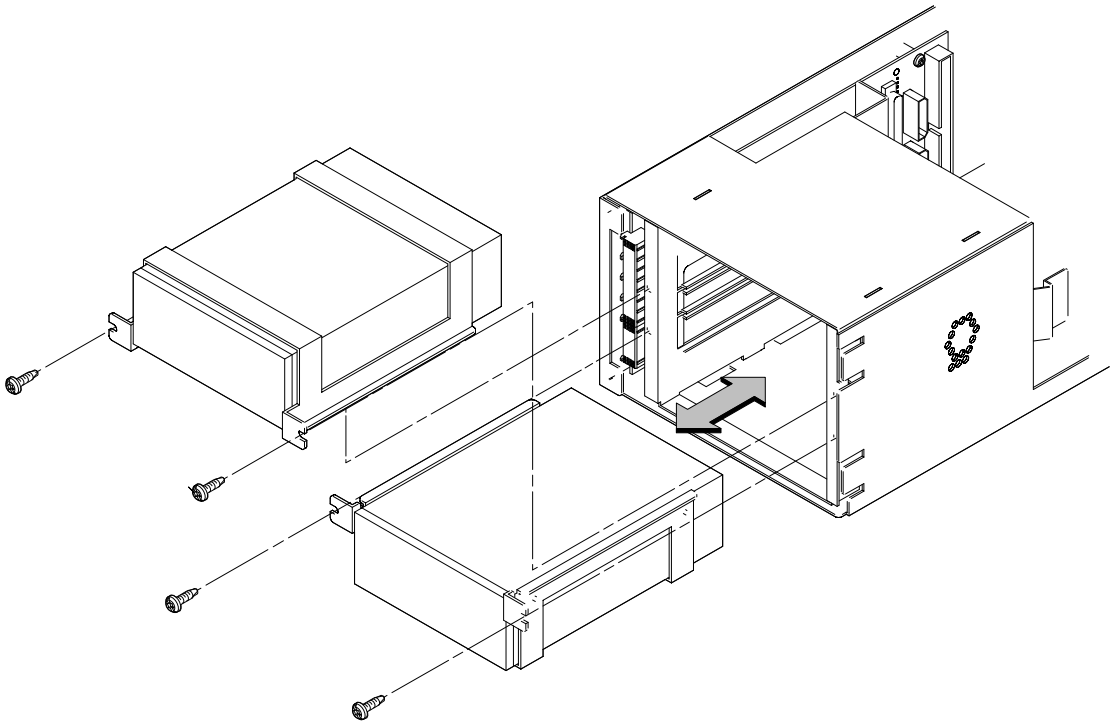
The Storage Assembly slides partway out of the drawer.



5. Be sure you have already checked the SCSI ID of the drive you want to install using the method described at the beginning of this section.

6. With the disk mounting bracket between the guides on each side of the Storage Assembly, slide the disk into the Storage Assembly, securing it to the drawer with two side screws. See Figure A–18. Do not over-tighten the side screws.

The drives should be placed in the drive bays with the bottom of each drive toward the middle, as shown in Figure A–18. Refer to Figure B-16 for drive orientation in the bracket.*Figure A–18. Placing Hard Drives in Storag*



7. Reconnect the SCSI and power cables from the back of the drive to the side of the drawer assembly.

8. Slide the drawer back in and secure.

9. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

10. Follow the instructions in the "Checking the SCSI IDs" subsection to verify that your workstation can see the hard drive.

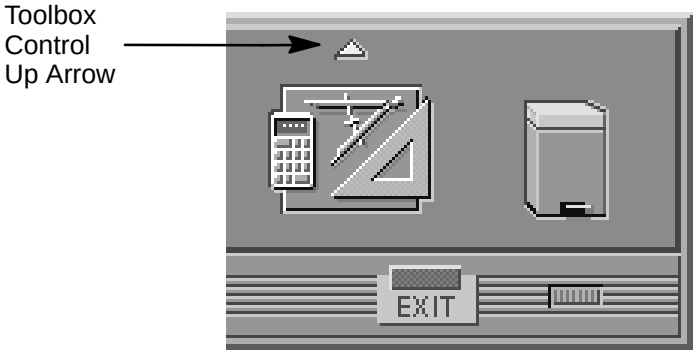
Configuring a Hard Drive

This section describes how to add a hard disk drive to your system as a file system using SAM. For more information about configuring a hard disk drive, refer to the *System Administration Tasks* manual.

The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

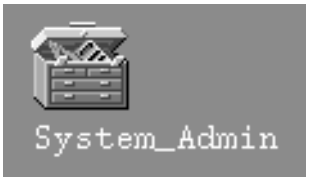
1. Log in as **root**.

2. Move the mouse pointer to the **up arrow** above the **Toolbox** control and click the left mouse button.



3. The **Toolbox** subpanel opens. Click on the **General** toolbox icon, shown below.

4. A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.



SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

5. Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double-click the left mouse button.

6. The **System Administration Manager** window opens. Double-click on **Peripheral Devices –>**.

7. The **Peripheral Devices** window opens. Double–click on **Disks and File Systems –>**.

8. The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks**.

The following screen message appears:

```
Scanning the system's hardware...
```

The **CD-ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system.

9. From the **Actions** menu, click on **Add a Hard Disk Drive**.

10. The **Select a Disk to Add...** window opens with a list of unused disks. Highlight the hard disk drive you want to add to your system.

11. Click on [OK].

12. The **Set Disk Usage and Options...** window opens. Select **File System** and click on [OK].

13. The following screen messages appear:

```
Task started.

Creating the device file...
Modifying "/etc/checklist"...
Task completed.
```

Click on [OK].

Installing Additional Memory

Take a moment to read over the following important notes about installing memory:

- Before trying to install additional memory SIMMs in your J Class workstation, use the procedure described in Appendix D, “The Boot Console Interface,” to determine the current memory configuration for this workstation.
- Read over the steps involved in installing memory SIMMs before you begin.
- SIMMs must be inserted in the order shown. Refer to Figure B–21.
- You must insert SIMMs in pairs of equal size.
- Be aware that it is possible to insert the SIMMs backwards into the connectors. Be sure therefore, that you understand the proper orientation for SIMMs going into the connectors. See Figure B–22.
- When you have finished installing additional SIMMs, use the Boot Console Interface to verify that they are seen by the workstation.

Perform the following steps to add memory SIMMs to your workstation. Note the instructions in Step 8 of this section on SIMM configuration before beginning these steps.

1. Open the system unit according to the directions in the “Opening the System Unit” section earlier in this appendix.
2. Remove the two screws in the center of the CPU Assembly.
3. Release the ejector tabs on the left side, top and bottom of the CPU Assembly. Refer to Figure A–19.

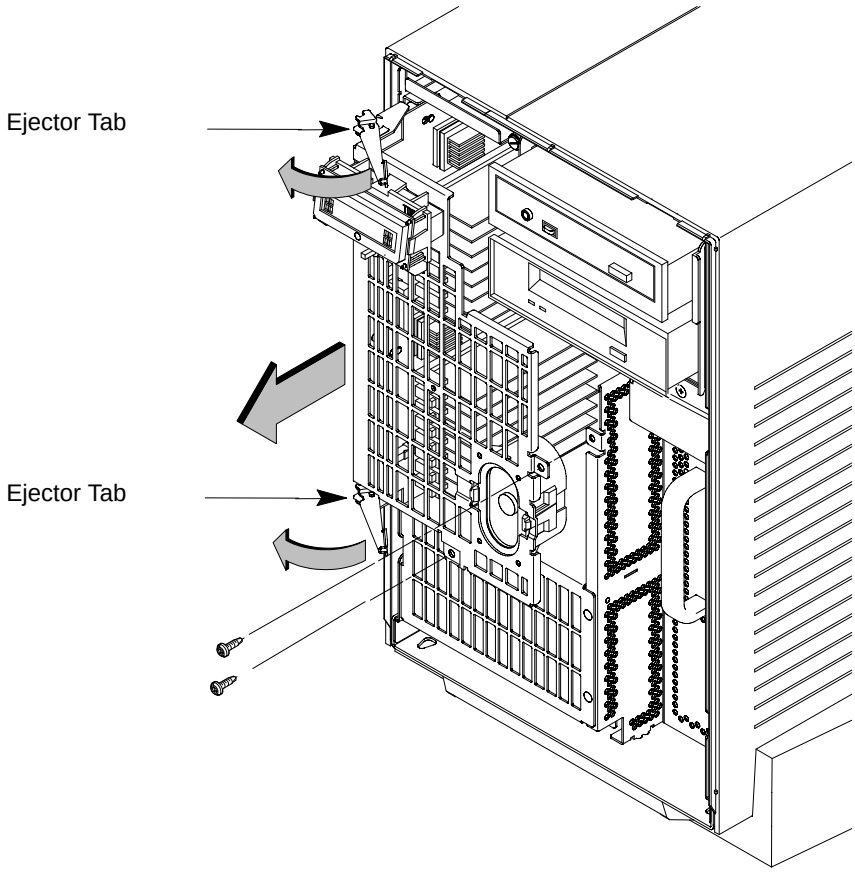


Figure A–19. Removing the CPU Assembly

4. Pull the CPU Assembly straight out and place on a flat surface with an antistatic mat.

NOTICE: The CPU Assembly is heavy and has no safety catch. Be sure to pull it out slowly, making sure it is properly supported.

5. Use Figure A–20 to locate the memory SIMMs on the CPU Assembly.

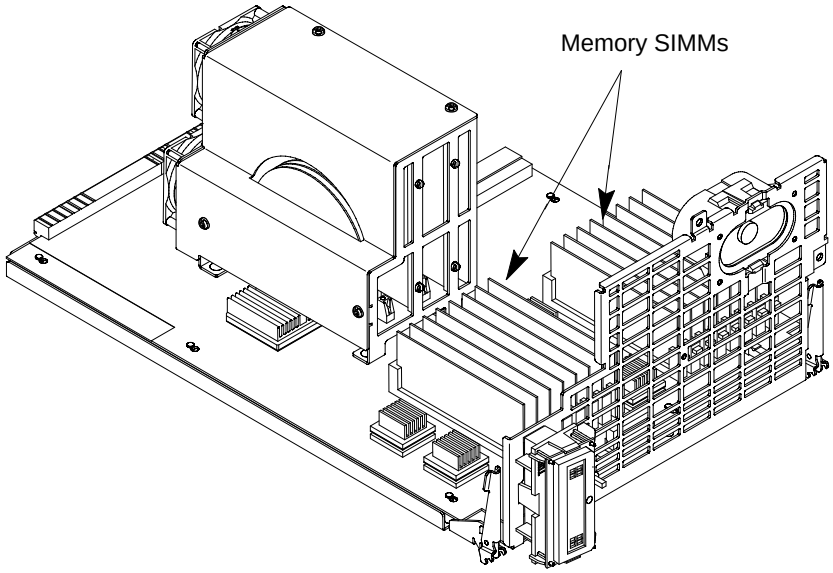


Figure A–20. Memory SIMM Location

6. To install a new memory SIMM, turn the CPU assembly until the memory SIMMs are in the position shown in Figure A–21.

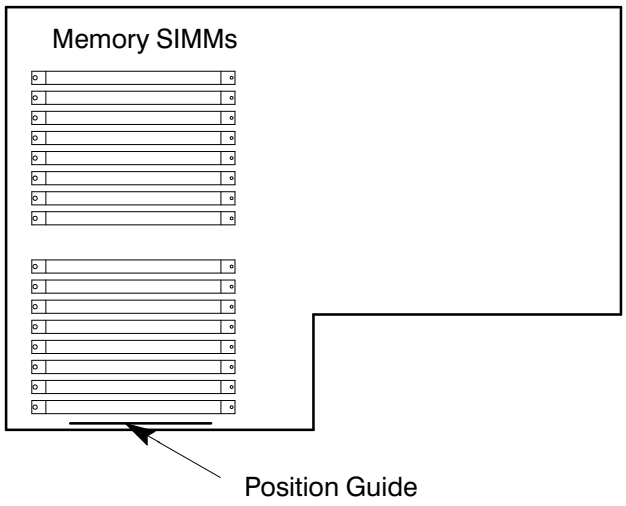


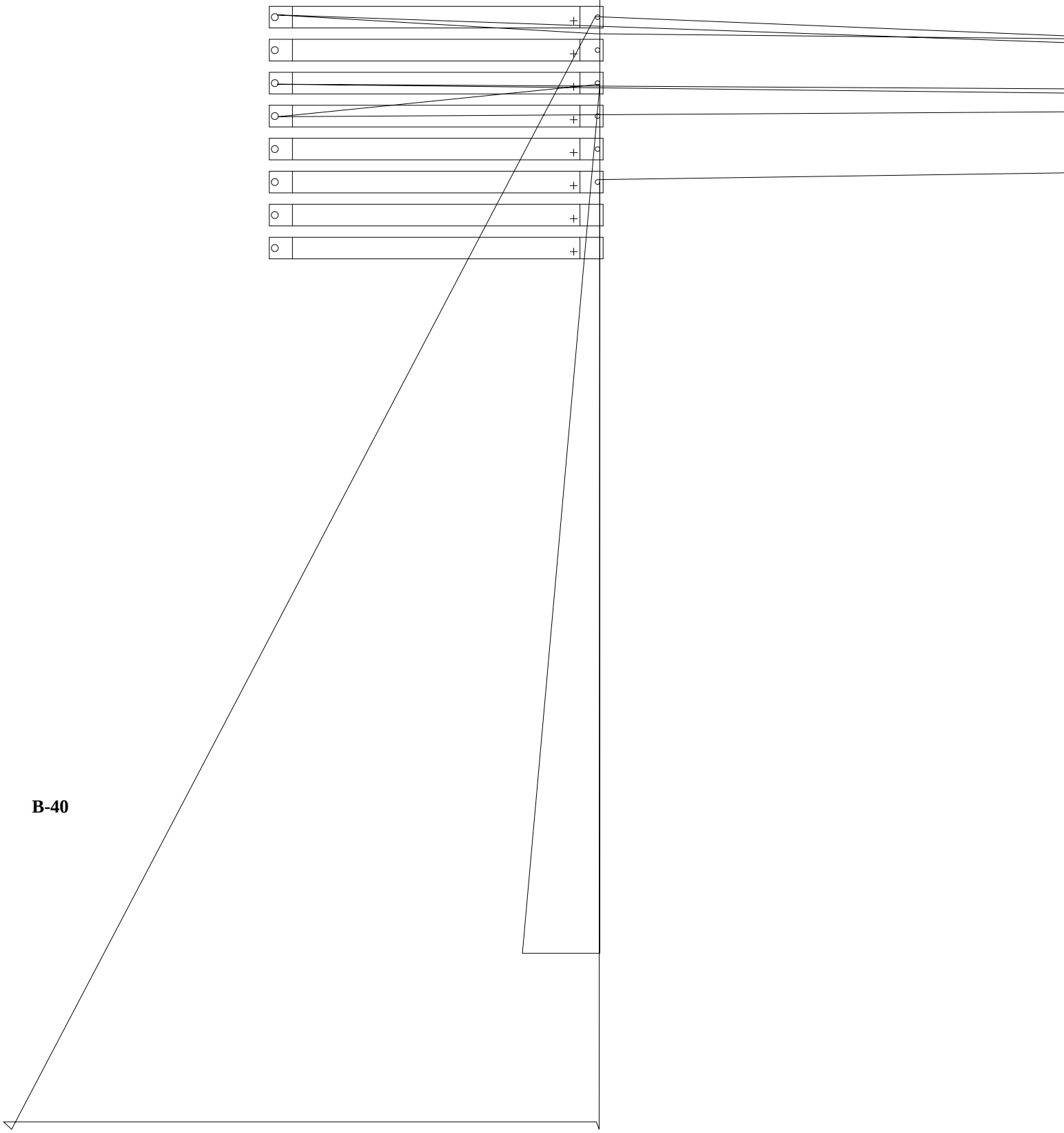
Figure A–21. CPU Assembly Orientation

7. Refer to the Position Guide on the CPU board that states, "<— POSITION MEM MODULE AS SHOWN," as shown in Figure A–21.

8. Install pairs of SIMMs in the following order: Pair 1 (0A, 0B), Pair 2 (1A, 1B), Pair 3 (2A, 2B), and so on.

This workstation has 16 memory slots, labeled 0A, 0B through 7A, 7B. Memory can be configured from 32 MB to 256 MB installed in pairs of 16 MB SIMMs. Memory can be configured from 128 MB to 768 MB (128 MB to 1 GB if you are running HP-UX 10.0), installed in pairs of 64 MB SIMMs, or memory can be configured from 32 MB to 768 MB (1 GB if you are running HP-UX 10.0) in combinations of pairs of 32 MB and 128 MB SIMM pairs. Memory SIMMs must be installed in pairs of equal size, with 128 MB SIMM pairs installed first, followed by 32 MB SIMM pairs. Figure A–22 gives the recommended order for installing pairs of SIMMs.

Any Combination of memory may be used, although, for maximum performance, we recommend using common-sized memory SIMMs; either all 32 MB or 128 MB SIMM pairs. Therefore, to achieve both maximum performance and maximum future capacity, use 128 MB SIMM pairs exclusively.



10. Place the SIMM in the connector, lining it up with the guides. Make sure to put the notched end toward the ejector handle (to the left).

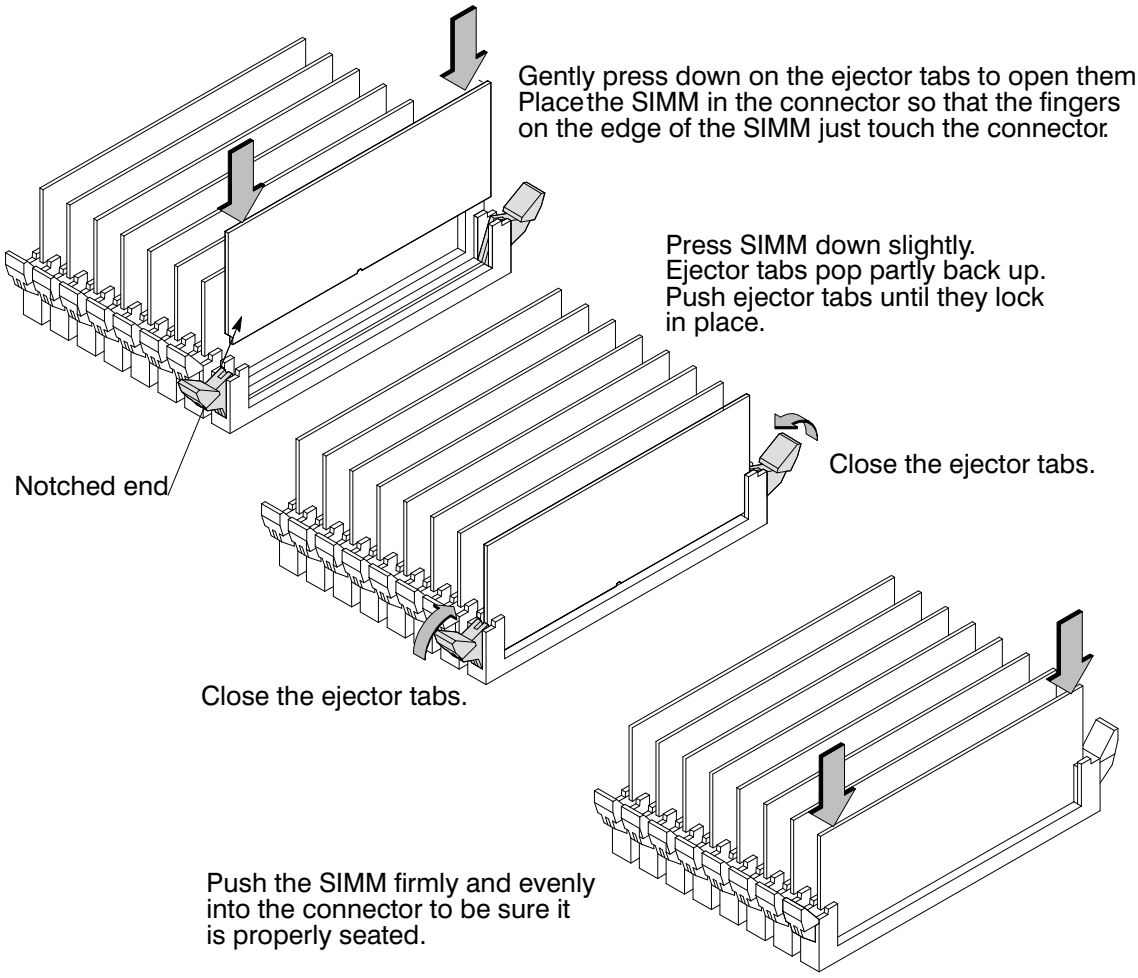
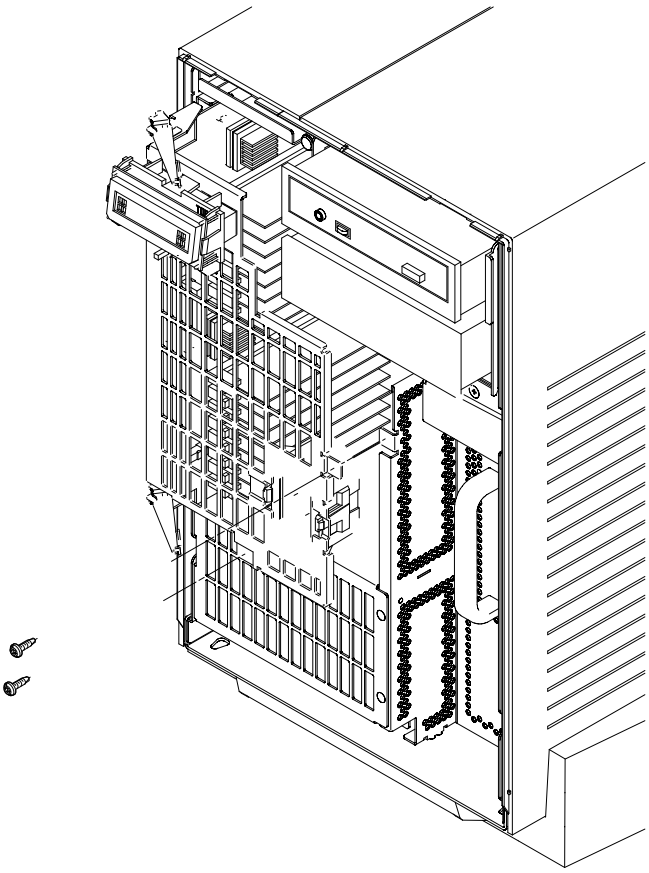

Gently press down on the ejector tabs to open them.
Place the SIMM in the connector so that the fingers on the edge of the SIMM just touch the connector.
Press SIMM down slightly.
Ejector tabs pop partly back up.
Push ejector tabs until they lock in place.
Close the ejector tabs.
Notched end
Close the ejector tabs.
Push the SIMM firmly and evenly into the connector to be sure it is properly seated.

Figure A–23. Installing Memory Cards

11. Close the ejector tab.

12. Press firmly and evenly on the SIMM to ensure that it seats properly.

13. To replace the CPU Assembly in the system unit, first align the top of the CPU Assembly with the guide on the system unit. Refer to Figure A–24 and to the label on the back of the assembly. Be sure to support the CPU Assembly properly while replacing it.



Next, align the bottom of the CPU Assembly with the guide on the system unit. With the ejector latches in the open position, slide the CPU Assembly into the system unit as far as it will go. See Figure A–24.

14. Press the ejector tabs all the way in and replace the two screws in the center of the CPU Assembly. Make sure the ejectors are completely depressed to ensure proper connector seating.

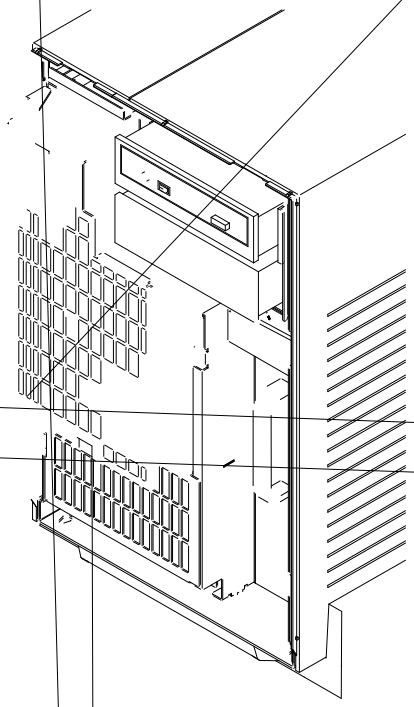
15. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

16. To verify that this installation was successful, follow the steps in Appendix D of this book, "The Boot Console Interface," on displaying memory information. If you have only replaced a faulty SIMM, you must issue the **pdt clear** command in the service menu of the Boot Console Interface. Answer yes (**y**) to the prompt "`Continue? (Y/N) >.`"

Perform the following steps to add a second processor to your workstation:

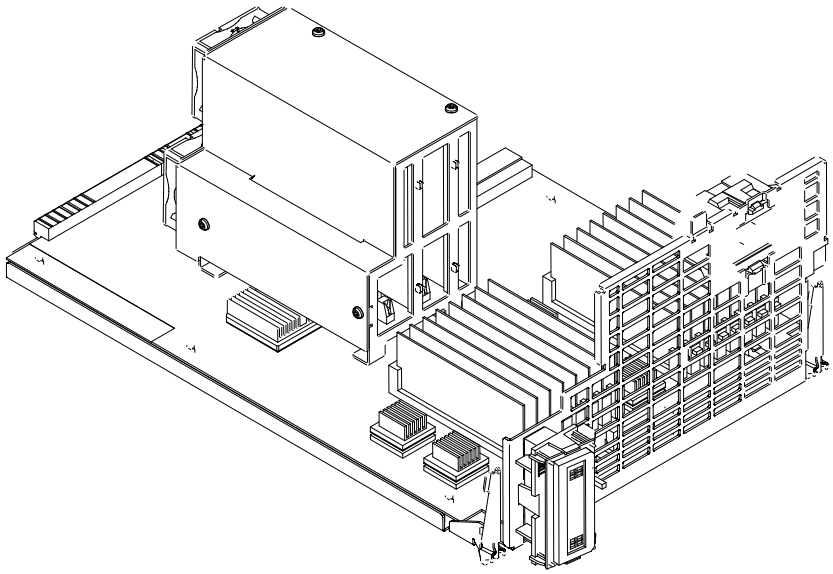
1. Open the system unit according to the directions in the “Opening the System Unit” section earlier in this appendix.

2. Remove the two screws in the center of the CPU Assembly.Ejector TabEjector Tab*Figure A*



4. Pull the CPU Assembly straight out and place on a flat surface with an antistatic mat.

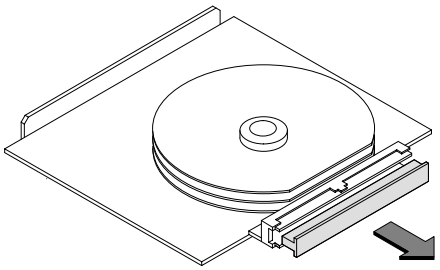
5. Locate the CPU shroud as shown in Figure A–26.CPU



- Processors are shipped with a dust cover (**A**) over the connector.
- There are two connectors on the CPU board for processors. If one of these connectors is not being used, it will have a dust cover (**B**) over the connector.

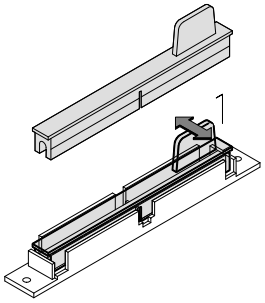
To remove these dust covers, follow the steps in Figure A–28.

To remove the dust cover on the processor module, grasp the cover and pull the cover evenly.



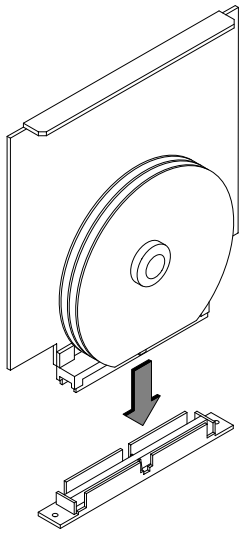
A

To remove the dust cover on the CPU board, grasp the tab on the right side of the cover and gently rock the cover back and forth while pulling it gently up.



B

Install the processor module into the connector by lining it up over the connector and pressing firmly and evenly.

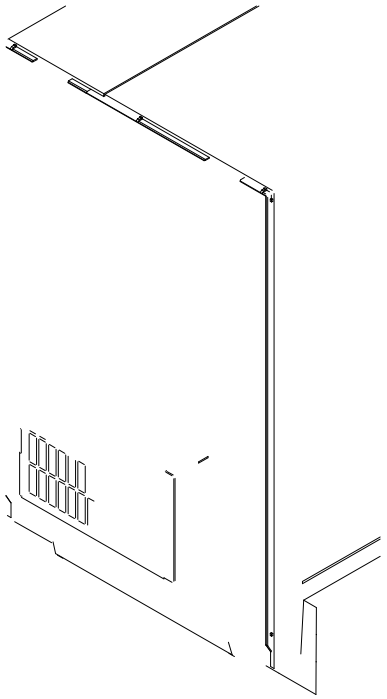


9. Insert the board containing the processor module into the guides and press firmly into place.

10. Replace the CPU shroud over the processor and replace the six screws attaching the CPU shroud to the system board

11. Reconnect the fan cable to the system board.

12. To replace the CPU Assembly in the system unit, first align the top of the CPU Assembly with the guide on the system unit. Refer to Figure A–29 and to the label on the back of the assembly. Be sure to support the CPU Assembly properly while replacing it.*Figure A–29. Replacing the CPU Assembly*



Next, align the bottom of the CPU Assembly with the guide on the system unit. With the ejector latches in the open position, slide the CPU Assembly into the system unit as far as it will go. See Figure A–29.

13. Press the ejector tabs all the way in and replace the two screws in the center of the CPU Assembly. Make sure the ejectors are completely depressed to ensure proper connector seating.

14. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section in this appendix.

Installing an EISA or Graphics Board

Your workstation's EISA Assembly has five slots. Four are EISA slots; of these, two are EISA-only and two are EISA/GSC slots. The bottom slot is GSC only.

The graphics boards supported by your workstation provide:

- HCRX-8/HCRX-24 Fast 8-plane or 24-plane graphics
- HCRX-8Z/HCRX-24Z Accelerated 8-plane or 24-plane graphics
- CRX-48Z 24-plane Accelerated, double-buffered graphics

NOTICE: Dual graphics boards take up two slots.

Figures A–30 and A–31 show the physical layout of the EISA/GSC slots, first from outside the system unit, then from inside the EISA Assembly.

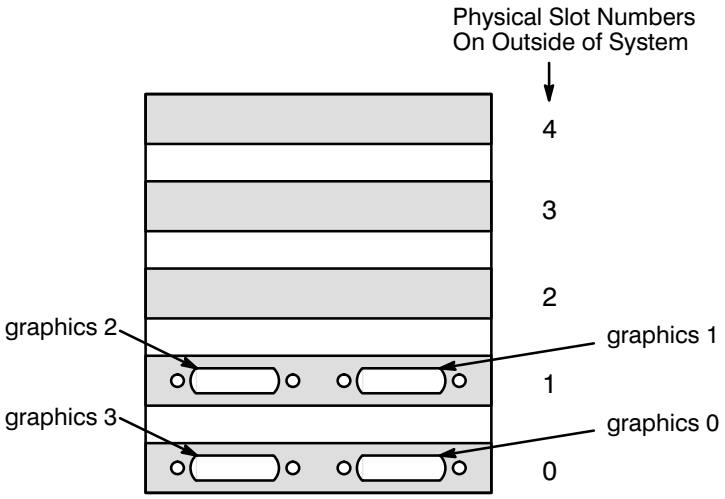


Figure A–30. EISA/GSC Slots from Outside the EISA Assembly

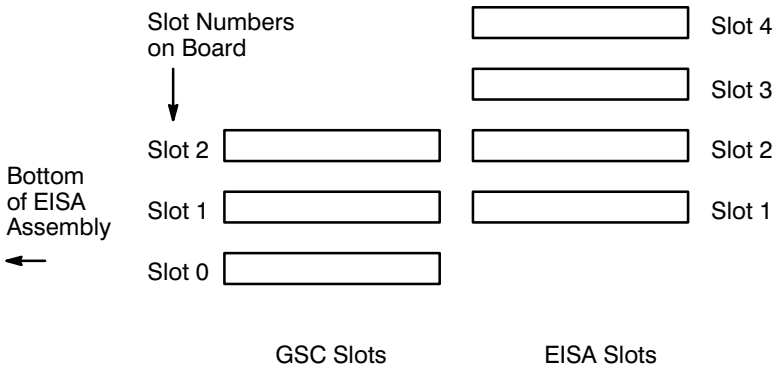


Figure A–31. EISA/GSC Slots from Inside the EISA Assembly

Physical slot 0 is always reserved for graphics cards only.

graphics0 Graphics device in slot 0. If using a Dual Graphics Card, this is the port to the right on the card when facing the back of the workstation.

graphics1 Graphics device in slot 1. If using a Dual Graphics Card, this is the port to the right on the card when facing the back of the workstation.

graphics2 Graphics device in slot 2. If there is a Dual Graphics Card in slot 1, this is the port to the left on the card when facing the back of the workstation.

graphics3 This is a logical slot, and can only be reached by using the left port of a Dual Graphics Card in physical slot 0.

NOTICE: We do **not** recommend using a Dual Graphics Card in slot 2, other than the CRX/HCRX. If running 9.05, you can only use a maximum of 2 graphics cards, with the exception of using the dual graphics card. If using the dual graphics card, it must be the only card in the system and be physically located in slot 0.

Follow these steps to install an EISA or graphics board into your workstation:

1. Working from the rear of the workstation, unscrew the four captive screws and pull the EISA Assembly straight out using the handle. See Figure A–32.

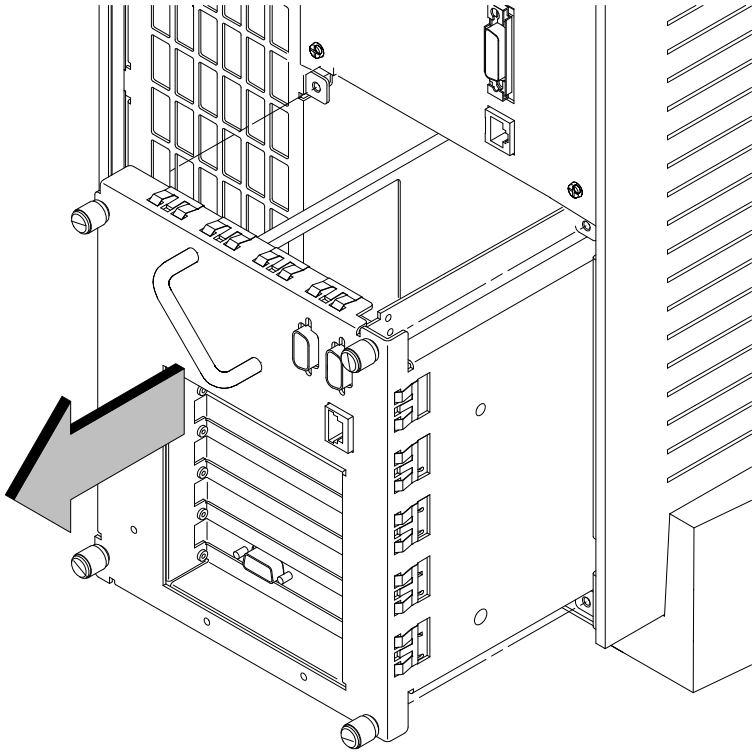
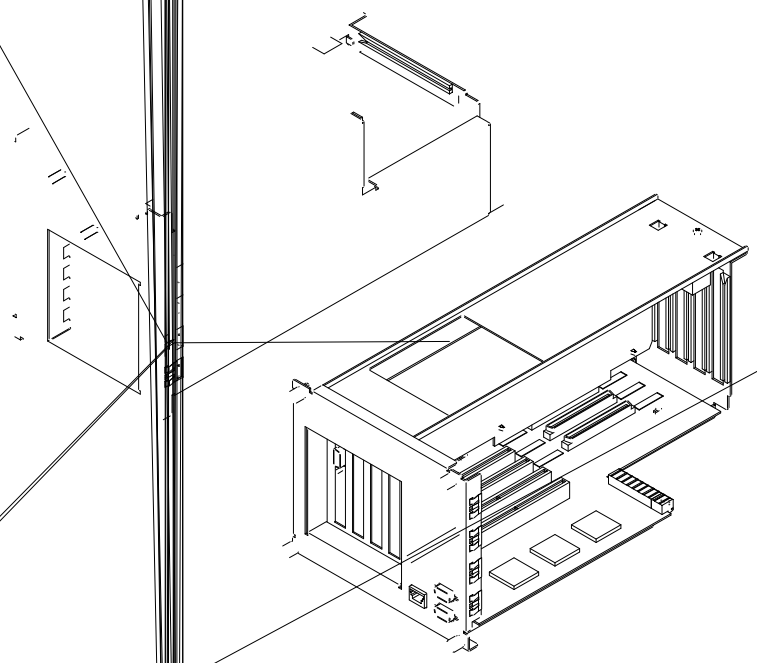
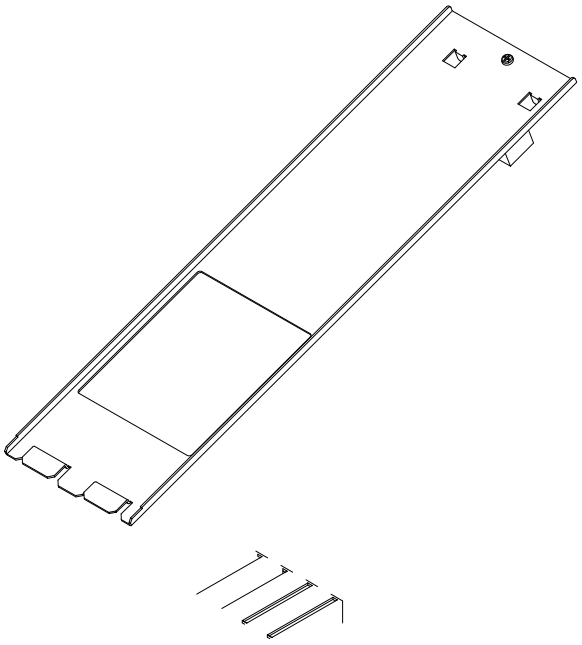


Figure A–32. Removing the EISA Assembly

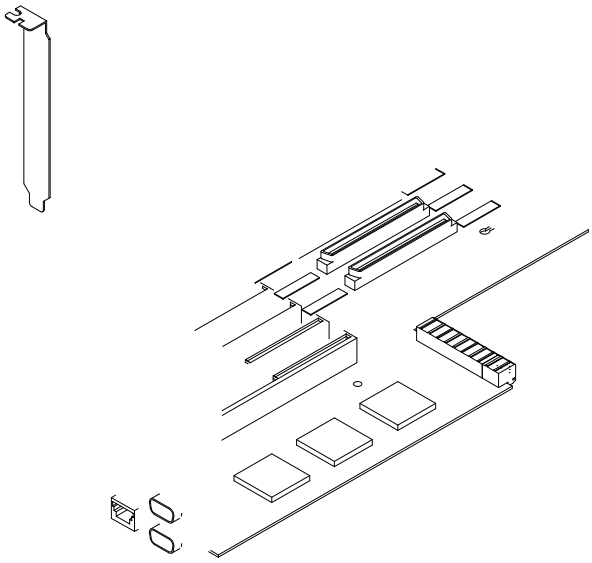
2. Rotate the unit 90 degrees clockwise and place on a flat surface, as shown in Figure A–33.



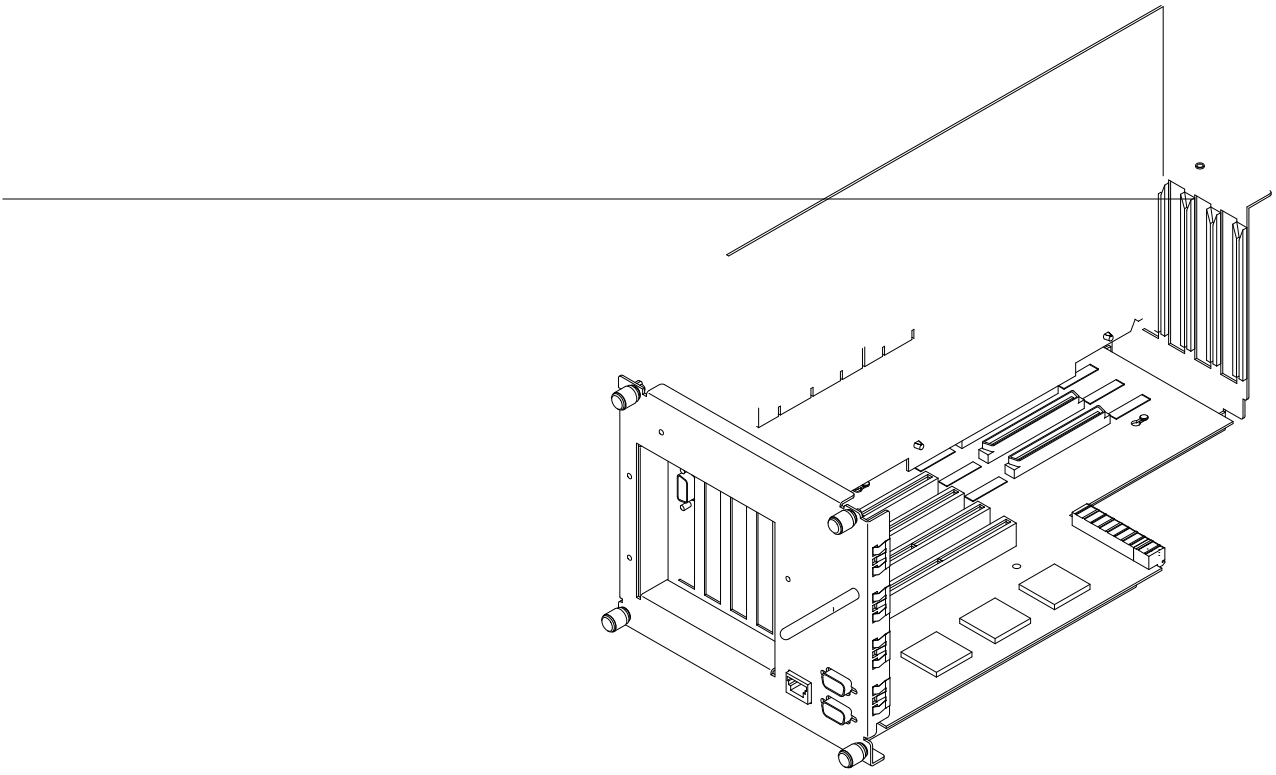
3. Unscrew one screw at the back of the cover and lift the cover up and out to remove it from the EISA Assembly. See Figure A–34.*Figure A–34. Removing the*



4. Unscrew one screw at the top of the slot cover and pull the cover straight up to remove it. See Figure A–35.



5. Place EISA or graphics board you are installing in the board guides and slide firmly into the connector. Check to see the board is evenly inserted to seat properly. See Figure A–36.*Figure AÄ813ÏÈ Installing an EIS*



7. Insert cover in guide and secure with screw. Refer to Figure A–37.

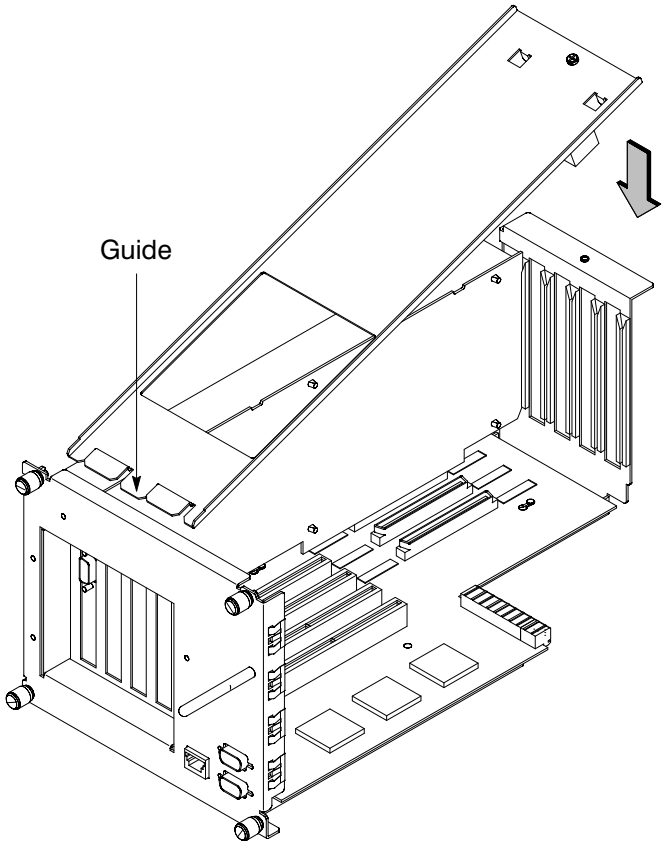
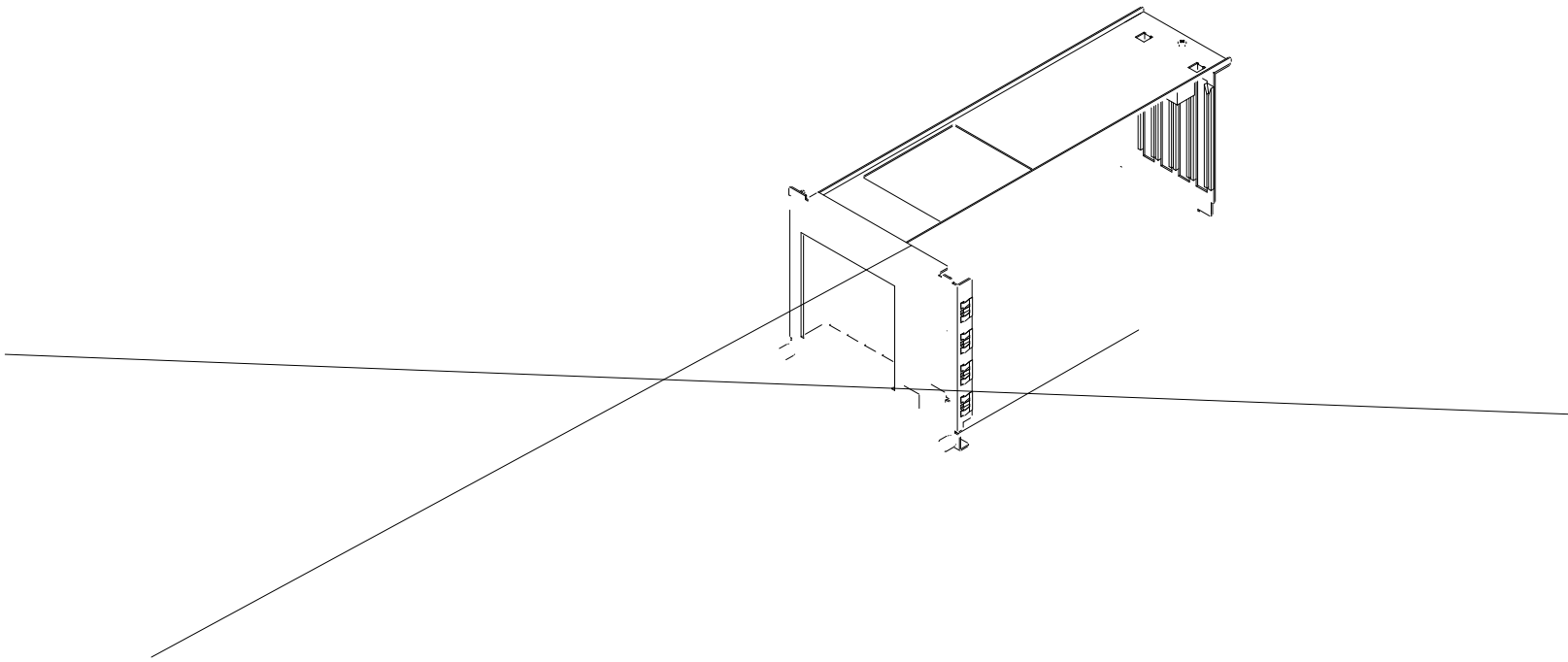


Figure A–37. Replacing EISA Assembly Cover

8. Rotate the unit back 90 degrees as shown in Figure A–38 and grasp the handle.*Figure A–38. Rotating the EISA Assembly Back*



9. Slide the EISA Assembly into the system unit and secure it with the four captive screws. See Figure A–39.

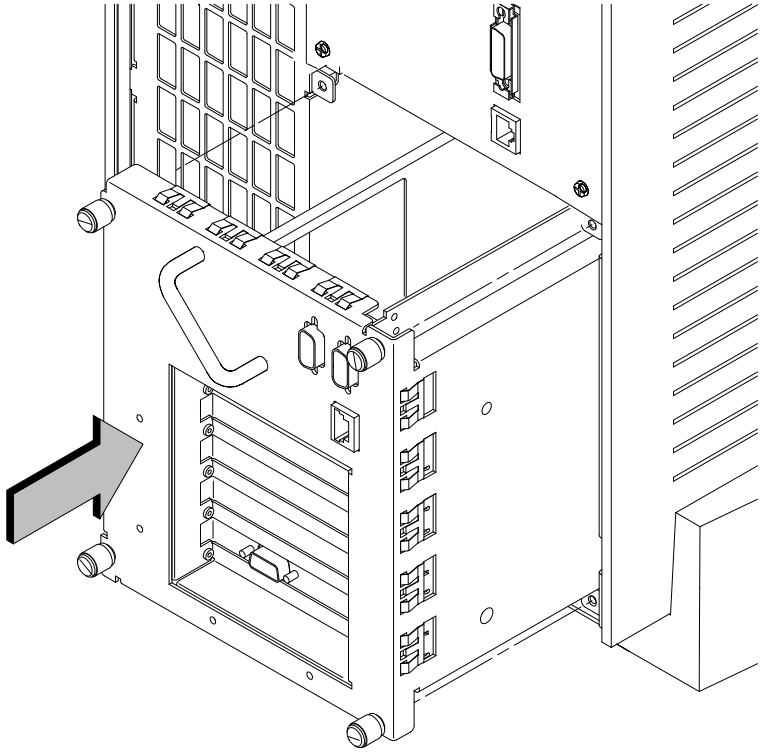


Figure A–39. Replacing EISA Assembly

Changing Your Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your monitor with a different type, you must reconfigure your workstation to support it

There are two ways to configure your workstation to support a different monitor type:

Setting the Monitor Type from the Boot Console Interface

To change your workstation's graphics parameters *before* you replace your monitor, go to "Displaying and Setting the Monitor Type" in Appendix D.

Setting the Monitor Type at Power On

If you

- replace your workstation's monitor with a different monitor type, and
- *do not* set the workstation's graphics parameters by using the **monitor** command before doing so,

then press Tab after your keyboard's lights flash during the boot process to initiate the automatic monitor selection process.

Your system queries you for the new monitor type. Select the new type by pressing Enter . The system queries you to confirm your selection. Press **y** to save this monitor type.

If you don't press y, the system cycles through the other monitor types, some of which your monitor won't display. Wait for the workstation to display your monitor type again, then select it.

Appendix B

Safety and Regulatory Statements

- Declaration of conformity
- Emissions regulations
- Emissions regulations compliance
- Datacom users statement
- Acoustics
- Electrostatic discharge (ESD) precautions
- Laser safety statements
- Warnings and cautions

This appendix contains safety and regulatory statements pertaining to your J Class workstation.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett Packard

Manufacturer's Addresses: 100 Domain Drive
Exeter, N.H. 03833
USA

declares that the product

Product Name: Computer Workstation
Model Number: HP 9000 / J200 Series
Base Product Number: A4081A
Product Options: All

conforms to the following Product Specifications:

Safety: IEC 950:1992 + A1, A2 / EN 60950:1992 + A1, A2

EMC: CISPR 22:1985 / EN 55022:1988 Class B (1)
EN 50082−1:1992
IEC 801−2: 1991 / prEN 55024−2:1992 − 3 kV CD, 8 kV AD
IEC 801−3: 1984 / prEN 55024−3:1991 − 3 V/m
IEC 801−4: 1988 / prEN 55024−4:1992 − 1 kV Power Lines
0.5 kV Signal Lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

(1) The product was tested in a typical Hewlett Packard workstation configuration.

Exeter, April 30, 1996
Date

James Kelly
James Kelly
Quality and Engineering Manager

European Contact: Your local Hewlett−Packard Sales and Service Office or Hewlett−Packard GmbH, Department ZQ/Standards Europe, Herrenberger Strasse 130, D−71034 Boeblingen (FAX:+49−7031−143143)

Emissions Regulations

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), you can correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Ask the dealer or an experienced radio/television technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept interference received, including interference that may cause undesired operation.
- Cables used with this device must be properly shielded to comply with the requirements of the FCC.

VCCI Class 1 ITE

この装置は、第一種情報処理装置（商工業地域において使用されるべき情報処理装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Emissions Regulations Compliance

Any third-party I/O device installed in HP system(s) must be in accordance with the requirements set forth in the preceding Emissions Regulations statements. In the event that a third-party noncompliant I/O device is installed, the customer assumes all responsibility and liability arising therefrom.

Datacom Users Statement (United Kingdom Only)

The HP 9000 J Class is approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunications systems within the United Kingdom.

Acoustics

Regulation On Noise Declaration For Machines –3. GSGV

Lpa <70dB	Lpa <70dB
operator position	am Arbeitsplatz
normal operation	normaler Betrieb
per ISO 7779	nach DIN 45635 T.19

Electrostatic Discharge (ESD) Precautions

Electrostatic charges can damage the integrated circuits on printed circuit boards. To prevent such damage from occurring, observe the following precautions during board unpacking and installation:

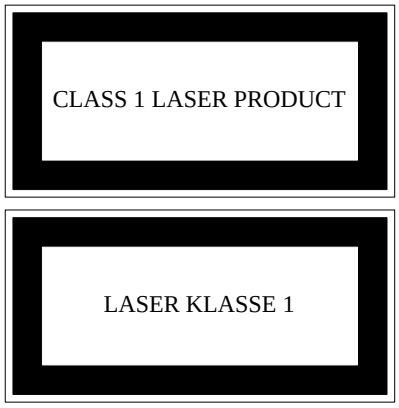
- Stand on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Connect all equipment together, including the static-free mat, static strap, routing nodes, and peripheral units.
- Keep uninstalled printed circuit boards in their protective antistatic bags.
- Handle printed circuit boards by their edges, once you have removed them from their protective antistatic bags.

Laser Safety Statement (For U.S.A. Only)

(For workstations that have a CD ROM drive installed.)
The CD-ROM mass storage system is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the *Radiation Control for Health and Safety Act* of 1968.

This means that the mass storage system does not produce hazardous laser radiation. Because laser light emitted inside the mass storage system is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

IEC 825 Class 1 Laser Label



Warnings and Cautions

WARNING:

Removing device cover may expose sharp edges in equipment chassis. To avoid injury, use care when installing customer add-on devices.

WARNUNG:

Das Entfernen der Geräteabdeckung legt die scharfen Kanten im Inneren des Gerätes frei. Um Verietzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

AVERTISSEMENT:

Des bords tranchants du châssis de l'équipement peuvent être exposés quand le cache de l'unité n'est pas en place. Pour éviter des blessures, faire très attention lors de l'installation de modules supplémentaires par le client.

WARNING:

Disconnect power plug from wall outlet or power source before moving or removing the device, or installing add-on components.

WARNUNG:

Entfernen Sie die Stromzuführung von der Steckdose oder der Stromquelle bevor Sie das Gerät bewegen, abbauen, oder zusätzliche Bauteile installieren.

AVERTISSEMENT:

Débrancher la fiche de la prise de courant ou de la source d'alimentation électrique avant de déplacer ou de retirer l'unité, ou avant d'installer des modules supplémentaires.

WARNING:

Lithium batteries may explode if mistreated. Do not put lithium batteries in fires or try to recharge or disassemble them.

Replace battery only with Matsushita Electric BR–2325 three-volt lithium battery (HP part number 1420–0314)! Use of any other battery may cause fire or explosion.

Appendix C

SCSI Connections

- SCSI bus differences
- SCSI restrictions
- Determining SCSI bus length
- Assigning SCSI device IDs
- Connecting to the SCSI ports

This appendix provides information about connecting Small Computer System Interface (SCSI) devices to an HP 9000 J Class workstation.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system with the HP VUE version 3.0 interface.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external devices are attached, the SCSI connector on the rear of the system must be terminated with the terminator that was shipped with your workstation.

SCSI Bus Differences

A Small Computer Systems Interface (SCSI) bus is an IEEE standard bus for connecting your workstation to internal and external devices (SCSI devices) running at different speeds, singly or in combination. Examples of these SCSI devices are floppy disk drives, 4-mm DDS-format tape drives, CD-ROM drives, and Winchester hard disk drives.

There are two types of SCSI buses available with this workstation – a single-ended SCSI bus, and a fast, wide SCSI bus. Table C–1 shows the specification differences between these SCSI buses, and Table C–2 shows the SCSI addresses, ID numbers, and arbitration priorities for each.

CAUTION: **Do not** mix single-ended and fast, wide devices on any one bus type. Doing this will cause a system failure.

Table C–1. SCSI Bus Differences

Transfer Rate	Data Bus Width	Maximum Addresses*	Maximum Cable Length	Device Physical Location	Controller Embedded or Plugable
Single-Ended up to 5 Mbytes per second	8 bits	8	6.0 meters (19.6 feet)	internal and external	embedded
Fast, Wide up to 20 Mbytes per second	16 bits	16	25 meters (82 feet)	internal and external	embedded
***** Address 7 is reserved for host controller use on both buses.					

Table C–2. SCSI Bus Addresses, ID Numbers, and Arbitration Priorities

SCSI–2 Address	SCSI–2 ID Number 15 8	SCSI–2 ID Number 7 0	Priority
7	. . . . .	1	1
6	. . . . .	. 1	2
5	. . . . .	. . 1	3
4	. . . . .	. . . 1 . . .	4
3	. . . . .	. . . . 1 . .	5
2	. . . . .	. . . . . 1 .	6
1	. . . . .	 1	7
0	. . . . .	. . . . .	8
15	1	. . . . .	9
14	. 1	. . . . .	10
13	. . 1	. . . . .	11
12	. . . 1 . . .	. . . . .	12
11	. . . . 1 . .	. . . . .	13
10	. . . . . 1 .	. . . . .	14
9	. . . . . 1 .	. . . . .	15
8	 1	. . . . .	16

8–bit devices
SCSI–2 Single–Ended

16–bit devices
SCSI–3 Fast, Wide Bus

SCSI Restrictions

This section describes the SCSI restrictions that apply to your workstation in the following areas:

- Cables
- Connectors and terminator
- SCSI configuration constraints

Cables

All SCSI devices ship without cables. Only SCSI cables approved by HP can be used to connect your workstation and any SCSI devices. HP offers the following SCSI cables for single-ended standard SCSI devices:

- K2296 cable with 0.9 meter (3 feet) length
- K2297 cable with 1.5 meter (5 feet) length

HP offers the following SCSI cables for connecting externally connected devices to the system fast, wide port:

- C2911A cable with 0.9 meter (3 feet) length
- C2924A cable with 2.5 meter (8.2 feet) length
- C2925A cable with 10.0 meter (32.8 feet) length
- C2926A cable with 20.0 meter (65.6 feet) length

CAUTION: SCSI cables approved by HP are designed to function within the SCSI tolerances for HP devices. Use of other cables can result in significant problems with system operation.

Singled-ended SCSI-2 definition limits the total cable length of SCSI-2 cables to 6 meters (19.6 feet).

Fast, wide SCSI-3 definition limits the total cable length of SCSI-3 cables to 25 meters (82 feet).

Always use the shortest possible cable(s) for your configuration.

If you are daisy-chaining single-ended standard SCSI-2 devices together, use the following cables:

- 92222A cable with 0.5 meter (1.6 feet) length
- 92222B cable with 1.0 meter (3.2 feet) length
- 92222C cable with 2.0 meter (6.6 feet) length

If you are daisy-chaining fast, wide SCSI-3 devices together, use the following cable:

- C2911A cable with 0.9 meter (3 feet) length
- C2924A cable with 2.5 meter (8.2 feet) length
- C2925A cable with 10.0 meter (32.8 feet) length
- C2926A cable with 20.0 meter (65.6 feet) length

NOTICE: See “Determining SCSI Bus Length” later in this Appendix to determine the total length of your cables.

Connectors and Terminator

Any single-ended standard SCSI-2 device connecting to the system board must use a 50-pin high-density thumb screw connector on the end connecting to the system board, and a 50-pin low-density bail lock connector on the other end. If you attach a second SCSI-2 device, the cable must have low-density connectors on each end.

Any fast, wide SCSI-3 device connecting to the system board must use a 68-pin high-density thumb screw connector on both ends.

The last device connected to the SCSI bus must be terminated with a SCSI terminator. All of the devices listed ship without terminators. If you do not already have a SCSI terminator, you must order terminator K2291 (for 50-pin connectors) or C2905A (for 68-pin connectors) from Hewlett-Packard.

SCSI Configuration Constraints

You are limited to the number of same-type SCSI devices per system. Before adding another SCSI device, determine if the system can support the additional device.

This workstation offers the following types of SCSI bus, each with its own configuration constraints:

- single-ended standard SCSI-2 bus
- fast-wide, SCSI-3 bus

Single-Ended SCSI-2 Bus Configuration Constraints

For the single-ended standard SCSI-2 bus, HP-UX supports only **one** of each type of removable disk drive and **two** of the same type tape devices per system. Table C–3 shows configuration constraints for each single-ended standard SCSI-2 device type. If the system has internal hard disk drives or a floppy disk drive, you must count them as SCSI-2 devices.

Table C–3. Single-Ended SCSI-2 Bus Configuration Constraints

Single-Ended SCSI-2 Devices	**Maximum Number of Each Type of Device Allowed**
Hard Disk Drives (internal and external)	7
Floppy Disk Drives	1
CD-ROM Drives	1
4-mm DDS Tape Drives (one internal)	2
9-track Tape Drives	2
650-MB Magneto-Optical Drives	1
Magneto-Optical Autochangers (see notice below)	1
Maximum Number of SCSI-2 Devices	**7**

NOTICE: Magneto-Optical Autochangers use three SCSI-2 drive addresses. Each address must be accounted for in the maximum number of SCSI-2 devices allowed.

CAUTION: Do not mix single-ended standard and fast, wide SCSI-2 peripherals.

Fast, Wide SCSI-3 Bus Configuration Constraints

Fast, wide SCSI-3 does not work with the single-ended standard SCSI-2. Table C–4 shows the configuration constraints for each fast, wide SCSI-3 device type.

Table C–4. Fast, Wide SCSI-3 Bus Configuration Constraints

External Fast, Wide SCSI-3 Devices	Maximum Number of Each Type of Device Allowed
SCSI-3 Drive (fast, wide disk drives only)	15
SCSI-3 Disk Arrays (addressed as single drive)	7

CAUTION: **Do not** mix single-ended and fast, wide SCSI peripherals together on the same bus.

Determining SCSI Bus Length

This section helps you to determine the total length of the single-ended standard SCSI-2 bus and the fast, wide SCSI-3 bus.

Single-Ended SCSI-2 Bus Length

Follow these instructions to calculate your total single-ended standard SCSI-2 bus length (including the system unit, external SCSI-2 devices, and SCSI-2 interconnect cables) using Table C–5:

1. Find all of your external SCSI-2 devices in the first column. In the third column, write the SCSI-2 bus lengths (from the second column) that correspond to your devices.

NOTICE: In the third column, the length for the System Unit is already listed. This number must always be used for the system unit.

2. In the fourth column, write down the lengths of the SCSI-2 interconnect cables you are using for your installation. (Cable lengths are listed in subsection “Cables” in the section on “SCSI Restrictions.”)

3. Add up all of the numbers in the third column and write that number on the subtotal line at the bottom of the column. Do the same for the fourth column.

4. Add the subtotals together and write the total in the *Total SCSI-2 Bus Length* box.

NOTICE: The total length of the single-ended standard SCSI-2 bus must not exceed 6 meters (19.6 feet). If the number you write for *Total SCSI-2 Bus Length* is greater than 6 meters (19.6 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C–5. SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
System Unit	1.5 (4.9)	1.5 (4.9)	N/A
7980S	0.0 (0.0)	_____	_____
A1999A	0.3 (1.0)	_____	_____
C1520A	0.2 (0.7)	_____	_____
C1521A	0.2 (0.7)	_____	_____
C1700C	1.1 (3.6)	_____	_____
C1701C	0.3 (1.0)	_____	_____
C1704C	0.0 (0.0)	_____	_____
C1705C	0.0 (0.0)	_____	_____
C2213A	1.5 (4.9)	_____	_____
C2217T	1.3 (4.3)	_____	_____

Subtotals: _____ + _____

Total SCSI-2 Bus Length = ☐

(Total SCSI-2 bus length not to exceed total of 6 meters [19.6 feet])

Fast, Wide SCSI-3 Bus Length

Follow these instructions to calculate your total fast, wide SCSI-3 bus length for the fast, wide SCSI-3 bus on your system using Table C–6:

1. List all of your internal SCSI-3 devices in the first column.

2. In the second column, write the lengths of the internal SCSI-3 bus that correspond to your devices.

3. In the third column, write down the lengths of the SCSI-3 interconnect cables you are using for your installation. (Cable lengths are listed in subsection “Cables” in the “SCSI Restrictions” section.)

4. Add up all of the numbers in the second column and write that number on the subtotal line at the bottom of the column. Do the same for the third column.

5. Add the subtotals together and write the total in the *Total SCSI-3 Bus Length* box.

NOTICE: The total length of the SCSI-3 bus must not exceed 25 meters (82 feet). If the number you write for *Total SCSI-2 Bus Length* is greater than 25 meters (82 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table C–6. SCSI-3 Bus Length Worksheet for Fast, Wide SCSI-3 Bus

SCSI-3 Device	Internal SCSI-3 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
System Unit	1.5 (4.9)	_____	N/A
C3034T	1.0 (3.3)	_____	_____
C3035T	1.0 (3.3)	_____	_____
C3036T	1.0 (3.3)	_____	_____

Subtotals: _____ + _____

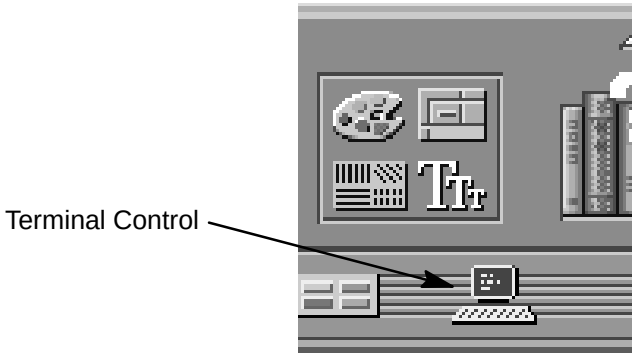
Total SCSI-3 Bus Length = [ ]

(Total SCSI-3 bus length not to exceed total of 25 meters [82 feet])

Assigning SCSI Device IDs

Before assigning a SCSI device ID to your drive, you need to check your existing SCSI device IDs. To determine which SCSI device IDs are available for your device, use the **ioscan** command in a terminal window:

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.



A terminal window opens.

2. Move the mouse cursor into the terminal window and single-click the left mouse button.

3. If you are using HP-UX 9.05, enter the following at the prompt:

/etc/ioscan –d scsi Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list should appear similar to the following:

```
H/W Path      Description      Status
===================================
2.0.1.2.0     cd-rom_drive     ok(nnnnnnnn)
```

If you are using HP-UX 10.0 or later, enter the following at the prompt:

/usr/sbin/ioscan –f Enter

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
Class       I  H/W Path       Driver      S/W State H/W Type  Description
===================================================================
bc          0                  root        CLAIMED   BUS_NEXUS
bc          1  8               ccio        CLAIMED   BUS_NEXUS I/O Adapter
ext_bus     0  8/0             c720        CLAIMED   INTERFACE GSC built-in Fast/Wide SCSI Interface
target      0  8/0.0           tgt         CLAIMED   DEVICE
disk        3  8/0.0.0         sdisk       CLAIMED   DEVICE    QUANTUM LPS1080WD
target      1  8/0.5           tgt         CLAIMED   DEVICE
disk        2  8/0.5.0         sdisk       CLAIMED   DEVICE    DEC     DSP3210SW
target      2  8/0.6           tgt         CLAIMED   DEVICE
disk        0  8/0.6.0         sdisk       CLAIMED   DEVICE    DEC     DSP3210SW
ba          0  8/12            bus_adapter CLAIMED   BUS_NEXUS Core I/O Adapter
ext_bus     2  8/12/0          CentIf      CLAIMED   INTERFACE Built-in Parallel Interface
audio       0  8/12/1          audio       CLAIMED   INTERFACE Built-in Audio
tty         0  8/12/4          asio0       CLAIMED   INTERFACE Built-in RS-232C
ext_bus     1  8/12/5          c700        CLAIMED   INTERFACE Built-in SCSI
target      3  8/12/5.2        tgt         CLAIMED   DEVICE
disk        1  8/12/5.2.0      sdisk       CLAIMED   DEVICE    TOSHIBA CD-ROM XM-4101TA
target      4  8/12/5.3        tgt         CLAIMED   DEVICE
tape        0  8/12/5.3.0      stape       CLAIMED   DEVICE    HP      HP35480A
target      5  8/12/5.4        tgt         CLAIMED   DEVICE
disk       10  8/12/5.4.0      sdisk       CLAIMED   DEVICE    SEAGATE ST3600N
target      6  8/12/5.6        tgt         CLAIMED   DEVICE
disk        5  8/12/5.6.0      sdisk       CLAIMED   DEVICE    MICROP  2112
lan         0  8/12/6          lan2        CLAIMED   INTERFACE Built-in LAN
ps2         0  8/12/7          ps2         CLAIMED   INTERFACE Built-in Keyboard/Mouse
bc          2  10              ccio        CLAIMED   BUS_NEXUS I/O Adapter
graphics    0  10/0            graph3      CLAIMED   INTERFACE Graphics
graphics    1  10/8            graph3      CLAIMED   INTERFACE Graphics
ext_bus     3  10/12           c720        CLAIMED   INTERFACE GSC add-on Fast/Wide SCSI Interface
target      7  10/12.4         tgt         CLAIMED   DEVICE
disk        6  10/12.4.0       sdisk       CLAIMED   DEVICE    SEAGATE ST31200W
graphics    2  10/16           graph3      CLAIMED   INTERFACE Graphics
ba          1  10/20           bus_adapter CLAIMED   BUS_NEXUS Core I/O Adapter
hil         0  10/20/1         hil         CLAIMED   INTERFACE Built-in HIL
tty         1  10/20/2         asio0       CLAIMED   INTERFACE Built-in RS-232C
ba          2  10/20/5         eisa        CLAIMED   BUS_NEXUS EISA Bus Adapter
ext_bus     4  10/20/5/3       hshpib      CLAIMED   INTERFACE EISA card HWP0C70
target      8  10/20/5/3.0     tgt         CLAIMED   DEVICE
disk        7  10/20/5/3.0.0   cs80        CLAIMED   DEVICE    disk 07959
target      9  10/20/5/3.1     tgt         CLAIMED   DEVICE
disk        8  10/20/5/3.1.0   cs80        CLAIMED   DEVICE    disk 07959
target     10  10/20/5/3.2     tgt         CLAIMED   DEVICE
disk        9  10/20/5/3.2.0   cs80        CLAIMED   DEVICE    disk 07959
processor   0  32              processor   CLAIMED   PROCESSOR Processor
processor   1  34              processor   CLAIMED   PROCESSOR Processor
memory      0  49              memory      CLAIMED   MEMORY    Memory
```

4. If you are using HP-UX 9.05, you can determine which SCSI IDs are currently in use by looking under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.6.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

   The information is presented in a different format if you are using HP-UX 10.0, although you still look under the **H/W Path** heading.

Single-Ended Standard System SCSI Device IDs

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check what SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table C–7:

1. Write in the SCSI device ID of any internal drives in Table C–7.

2. Write in the type of external drives (single-ended standard, EISA, or fast, wide devices) currently connected to your system under the heading “External Device Drives” and each drive’s SCSI device ID under the heading “Device ID Number.”

3. Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 4.

NOTICE: The C1700A Magneto-Optical Autochanger uses three SCSI addresses, and accounts for three of the seven devices allowed on the SCSI bus.

4. Check to see which SCSI device IDs are not used. You can use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI device ID to your drive. See the drive installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI device ID 7 for any device except the system card.

Table C–7. Single-Ended SCSI Device IDs

SCSI Device Drives	**Device ID (Address) Number (Only 0 through 6 Available)** **Internal**	**External**
Internal System Drives:		
System SCSI Drive(s)		
Floppy Disk Drive (if present, uses ID No. 0)	_____	N/A
CD–ROM Drive (if present, uses ID No. 2)	_____	N/A
4-mm DDS Tape Drive (if present, uses ID No. 1)	_____	N/A
External Device Drives:		
1st External Device _____	N/A	_____
2nd External Device _____	N/A	_____
3rd External Device _____	N/A	_____
4th External Device _____	N/A	_____
5th External Device _____	N/A	_____
6th External Device _____	N/A	_____
7th External Device _____	N/A	_____
NOTICE: You can have no more than 7 SCSI devices (internal and external) connected to the system.		

5. Write in the SCSI device ID of any internal drives.

6. Write in the type of external single-ended drives currently connected to your workstation under the heading “External Device Drives” and each drive’s SCSI device ID under the heading “Device ID Number.”

7. Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 8.

NOTICE: The C1700A Magneto-Optical Autochanger uses three SCSI IDs, and accounts for three of the seven devices allowed on the SCSI bus.

8. Check to see which SCSI device IDs are not used. You may use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI device ID to your drive. Refer to the drive’s installation documentation for information on changing the device ID.

CAUTION: **Do not** use SCSI device ID 7 for any device. It is reserved for the built-in SCSI bus controller.

Fast, Wide SCSI IDs

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check which SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table C–8:

1. Write in the type of internal drives currently connected to your system under the heading "Fast, Wide SCSI Device Drives" and each drive's SCSI device ID under the heading "Device ID Number."

2. Add your new drive to the table.

3. Check to see what SCSI device IDs are not used. You may use ID numbers 0 through 6 and 8 through 15 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, assign a new fast, wide SCSI device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI device ID 7 for any device.

Table C–8. Fast, Wide SCSI Device IDs

Fast, Wide Differential SCSI Device Drives	**Device ID (Address) Number (ID 7 not available)**
1st Internal Device _____	6
2nd Internal Device _____	5
NOTICE: You can have no more than 15 SCSI devices connected to a fast, wide bus.	

Connecting to the SCSI Ports

This section describes how to connect to the system SCSI ports (single-ended and fast,wide).

System SCSI Port Connection

The system contains two (2) SCSI connectors:

- System Single-Ended SCSI-2 Connector
- System Fast, Wide SCSI-3 Connector

Figure C–1 shows the rear panel with terminators attached to the two SCSI connectors. Figure C–2 shows the two SCSI connectors without terminators. SCSI cables connect to these ports with a high-density thumb screw connector.

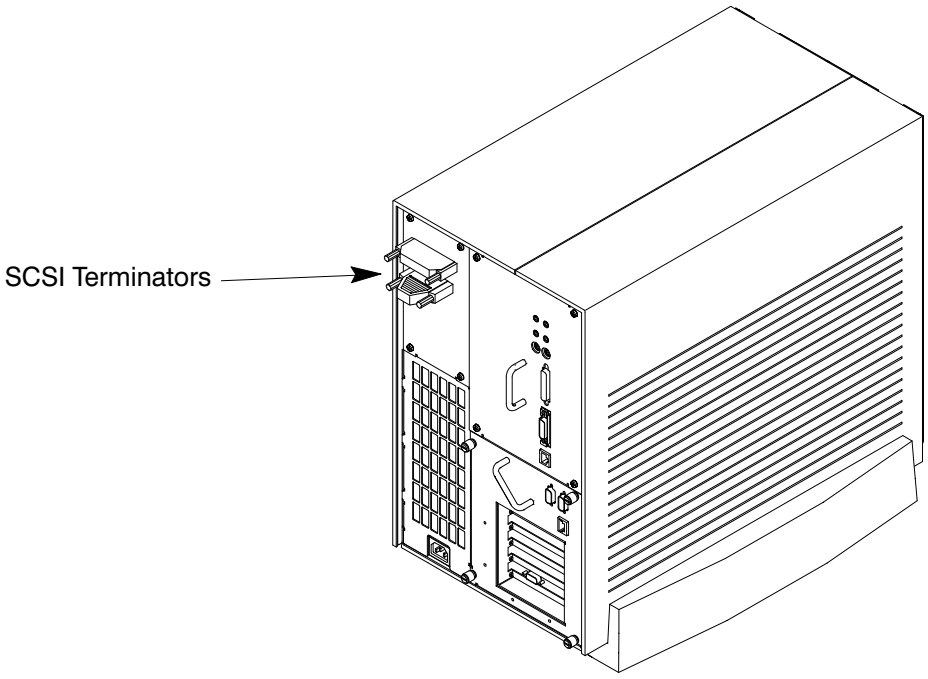
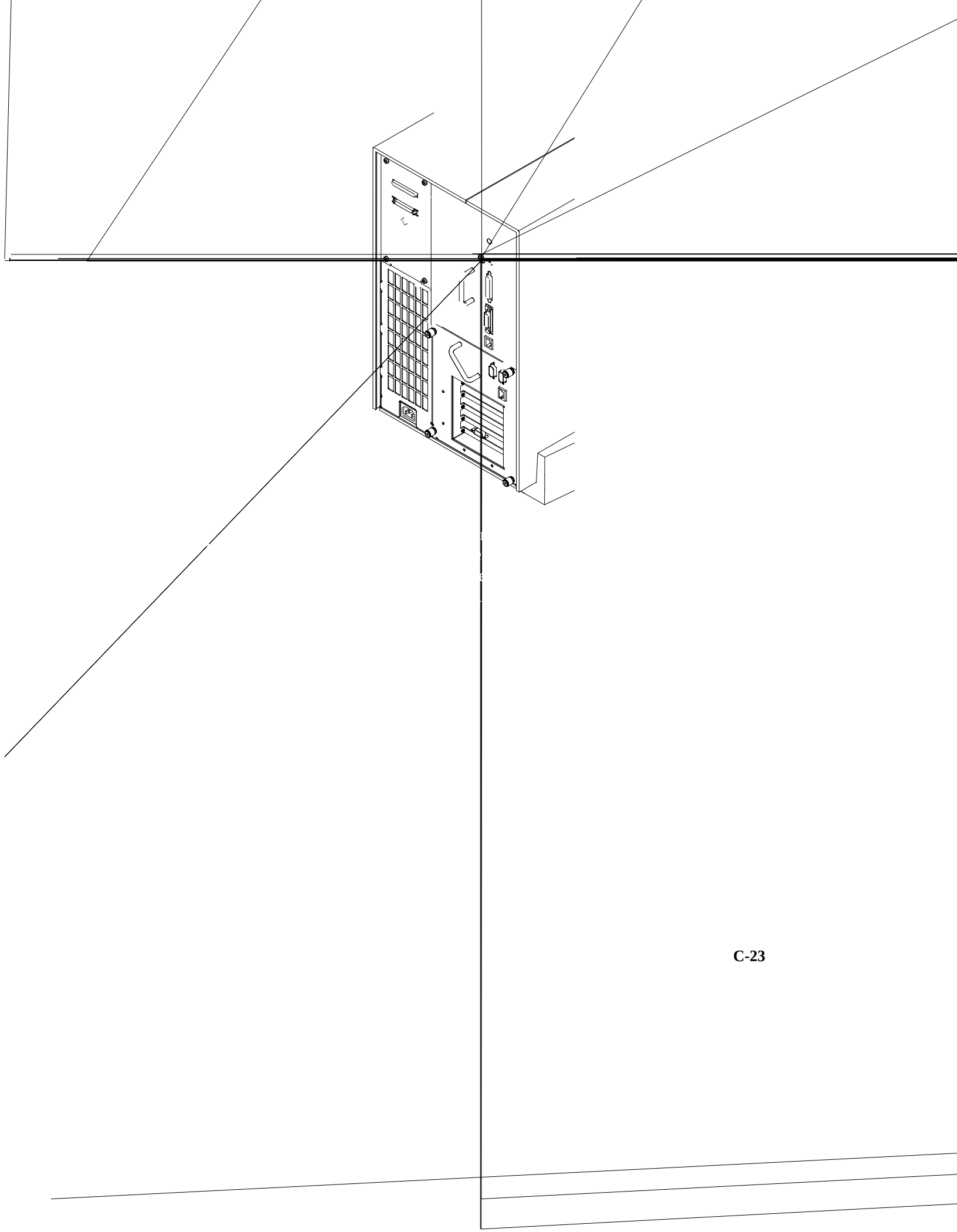


Figure C–1. Rear Panel SCSI Connectors with Terminators Attached



Appendix D

The Boot Console Interface

- Boot console interface features
- Accessing the boot console interface
- Booting your workstation
- Searching for bootable media
- Resetting your workstation
- Displaying and setting paths
- Displaying and setting the monitor type
- Displaying memory configuration information
- Displaying the status of the EISA slots
- Setting auto boot and auto search flags
- Displaying and setting fastboot mode
- Displaying the LAN station address
- Displaying system information
- Displaying PIM information

This appendix describes the different features of the boot console interface and how to use them.

The instructions in this chapter assume you are using the HP-UX version 9.05 or later operating system.

Boot Console Interface Features

There are times when you want to interact directly with the hardware of your workstation **before** it boots the operating system. Your workstation provides a menu-driven **boot console interface** that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

- Boot your workstation
- Search for bootable media
- Reset your workstation
- Display and set boot paths
- Display and set your monitor type
- Display memory configuration information
- Display the status of the EISA slots
- Set auto boot and auto search
- Set fastboot
- Display LAN information
- Display system information
- Display PIM information

NOTICE: All of the tasks in the boot console interface should be performed by a system administrator.

The **boot console** menus follow, showing the various tasks you can perform and the information available.

The shortened version of all commands is indicated by the uppercase letters.

Help is available for all the menus and commands by using either **help**, **he**, or **?** and the menu or command you want help on.

```
------ Main Menu ------------------------------------------------------------

         Command                                 Description
         -------                                 -----------

         BOot [PRI|ALT|<path>]                   Boot from specified path
         PAth [PRI|ALT|CON|KEY] [<path>]         Display or modify a path
         SEArch [DIsplay|IPL] [<path>]           Search for boot devices

         COnfiguration menu                      Displays or sets boot values
         INformation menu                        Displays hardware information
         SERvice menu                            Displays service commands

         DIsplay                                 Redisplay the current menu
         HElp [<menu>|<command>]                 Display help for menu or command
         RESET                                   Restart the system

------
Main Menu: Enter a command or a menu >
```

```
------ Configuration Menu ------------------------------------------------------

         Command                                 Description
         -------                                 -----------

         AUto [BOot|SEArch] [ON|OFF]             Display or set specified flag
         BootInfo                                Display boot-related information
         DEfault                                 Set the system to predefined values
         FastBoot [ON|OFF]                       Display or set boot tests execution
         LanAddress [<option>]                   Display Core LAN station address
         MOnitor [<option>]                      Display or set monitor type in EEPROM
         PAth [PRI|ALT|CON|KEY] [<path>]         Display or modify a path
         PRocessor [<proc>] [ON|OFF]             Config/Deconfig processor
         SEArch [DIsplay|IPL] [<path>]           Search for boot devices
         TIme [c:y:m:d:h:m:[s]                   Read or set the real time clock in GMT

         BOot [PRI|ALT|<path>]                   Boot from specified path
         DIsplay                                 Redisplay the current menu
         HElp [<command>]                        Display help for menu or command
         RESET                                   Restart the system
         MAin                                    Return to Main Menu

------
Configuration Menu: Enter a command or a menu >
```

```
------ Information Menu ------------------------------------------------------

         Command                                Description
         -------                                -----------

         ALL                                    Display all system information
         BootInfo                               Display boot-related information
         CAche                                  Display cache information
         COprocessor                            Display coprocessor information
         EIsa                                   Display EISA slot information
         FWrVersion                             Display firmware version
         MEmory                                 Display memory information
         MOnitor                                Display monitor type in EEPROM
         PRocessor                              Display processor information

         BOot [PRI|ALT|<path>]                  Boot from specified path
         DIsplay                                Redisplay the current menu
         HElp [<command>]                       Display help for menu or command
         RESET                                  Restart the system
         MAin                                   Return to Main Menu

------
Information Menu: Enter a command or a menu >
```

```
------ Service Menu ------------------------------------------------------------

         Command                                 Description
         -------                                 -----------

         MemRead <address> [<len>]               Read memory and I/O locations
         PIM [<proc>][HPMC|LPMC|TOC]             Display PIM information
         PDT [CLEAR]                             Display or clear the Page Deallocation
                                                   Table
         ChassisCodes [<proc>]                   Display chassis codes

         BOot [PRI|ALT|<path>]                   Boot from specified path
         DIsplay                                 Redisplay the current menu
         HElp [<command>]                        Display help for menu or command
         RESET                                   Restart the system
         MAin                                    Return to Main Menu

------
Service Menu: Enter a command or a menu >
```

Accessing the Boot Console Interface

To access the boot console interface, follow these steps:

NOTICE: This procedure should be done by a system administrator.

1. Close any files and applications on your workstation.

2. Follow your normal shutdown procedure. For more information on shutting down your workstation, see *Using your HP Workstation*.

If Autoboot is turned off, the boot sequence automatically stops at the boot console Main Menu.

If Autoboot is turned on, you will see the following messages:

```
Processor is starting Autoboot process. To
discontinue, press any key within 10 seconds.
```

3. Press a key. You will then see the message:

```
Boot terminated
```

The Main Menu of the boot console appears.

Booting Your Workstation

Usually, you start your workstation by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual sequence to occur.

For example, you may want to start your workstation from an operating system that is stored on a device that is different from your usual boot device. If your normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps another type of device, such as a DDS-format tape drive.

Here are some situations and examples:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > boot device Enter
```

  where *device* is the **hardware path** to the device, specified in **Mnemonic Style Notation** (see Table D–2).

  For example, if you wish to boot an operating system that is stored on a DDS-format tape in a drive that is located at ''scsi.1.0'', follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following command at the prompt:

```
Main Menu: Enter a command or a menu > boot scsi.1.0 Enter
```

  The operating system on the specified device is used to start your workstation.

- If you wish to interact with the **Initial System Loader** (**ISL**) before booting your workstation, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

  ```
  Main Menu: Enter a command or a menu > boot device Enter
  ```

  You are prompted:

  ```
  Interact with ISL (Y or N) > y Enter
  ```

  Answering yes (**y**) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your screen:

  ```
  ISL>
  ```

  ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system.

  For example, if the usual kernel (**/hp-ux** for 9.05 or later, and **/stand/vmunix** for 10.0 or later) on your root disk (**fwscsi.6.0**) has become corrupted, and you wish to boot your workstation from the backup kernel (**/SYSBCKUP** for 9.05 or later, and **/stand/vmunix.prev** for 10.0 or later), type the following at the `ISL>` prompt:

  ```
  ISL> hpux /SYSBCKUP Enter (for 9.05 or later)
  ISL> /stand/vmunix /stand/vmunix.prev Enter (for 10.0 or
                                               later)
  ```

- If you do not know the locations of the bootable operating systems on the various media in your file system, you can find them with the **search** command.

Searching for Bootable Media

To list devices that contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > search ipl Enter
```

The search command searches all buses. The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal's keyboard by performing the following steps:

- To hold the display temporarily, press Ctrl S
- To continue the display, press Ctrl Q
- To halt the search, press any key

These flow-control commands do not work with a bitmapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of *just one type* that actually contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > search ipl device_type Enter
```

where *device_type* is one of the following:

fwscsi is the built-in fast, wide SCSI bus
scsi is the built-in single-ended SCSI bus
lan is all connections to the built-in LAN

Resetting Your Workstation

To reset your workstation, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > reset Enter
```

Displaying and Setting Paths

A **path** is the hardware address of a device that is attached to the I/O system of your workstation. The **path** command sets the system paths shown in Table D–1:

The **path** command sets and displays the hardware address of a specified device attached to the I/O bus of your workstation.

Table D–1. System Paths

Path Type	Device
primary or **pri**	Your workstation's default boot device (usually the root disk)
alternate or **alt**	Your workstation's alternate boot device (usually a DDS-format tape device)

To display the current settings for the system paths, type the following at the prompt:

```
Main Menu: Enter a command or a menu > path Enter
```

The paths are displayed in Mnemonic Style Notation, as shown in Table D–2.

Table D–2. Mnemonic Style Notation

I/O Type	Specification Format
Built-in FWSCSI	**fwscsi**.*scsi_address.logical_unit_number*
Built-in SCSI	**scsi**.*scsi_address.logical_unit_number*
Built-in LAN	**lan**.*server_address.init_timeout.io_timeout*

To display the current setting for a particular system path, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > path path_type Enter
```

where *path_type* is one of the path types listed in Table D–1.

For example, to get the path to the primary boot device, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > path primary Enter
```

To set a system path to a new value, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > path path_type path Enter
```

where *path_type* is one of the path types listed in Table D–1 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table D–2). For example, to set the primary boot path to a SCSI disk with an ID of 6.0, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > path pri fwscsi.6.0 Enter
```

Displaying and Setting the Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your workstation's monitor with a different type of monitor, you must reconfigure your workstation to support the new monitor.

The Monitor Command

The **monitor** command lets you change your workstation's graphics configuration. This command is available in both the Information and Configuration Menus of the boot console interface, however, when you use it in the Information Menu, **monitor** displays only the current graphics and console information. You must use **monitor** in the Configuration Menu to set a monitor type.

The correct usage for this command is:

monitor <*graphics_path*>

where valid *graphics_path* parameters are:

graphics0 Graphics device in slot 0. If using a Dual Color Graphics Card, this is the console port to the right on the card when facing the back of the workstation.

graphics1 Graphics device in slot 1. If using a Dual Color Graphics Card, this is the console port to the right on the card when facing the back of the workstation.

graphics2 Graphics device in slot 2. If there is a Dual Color Graphics Card in slot1, this is the console port to the left on the card when facing the back of the workstation.

graphics3 This is a logical slot, and can only be reached by using a Dual Color Graphics Card in slot0. It is the console port to the left of the card when facing the back of the workstation.

NOTICE: We do **not** recommend using a Dual Graphics Card in slot 2, other than the CRX/HCRX. If running 9.05, you can only use a maximum of 2 graphics cards, with the exception of using the dual graphics card. If using the dual graphics card, it must be the

only card in the system and be physically located in slot 0.

The **monitor** command lets you change your workstation's graphics configuration *before* you replace your monitor. For information about changing the configuration *after* you replace your monitor, go to the section "Changing Your Monitor Type" in Appendix B of this book.

Displaying the Current Monitor Configuration

To display the current monitor configuration for your system from the Configuration Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix. Once you are in the Boot Console Interface Main Menu, type:

```
Main Menu: Enter a command or a menu > configuration Enter
```

This places you in the Configuration Menu. From here type:

```
Configuration Menu: Enter command > monitor Enter
```

The screen displays a list of the current monitors configured for your workstation.

```
MONITOR INFORMATION
Slot #           HPA           State       Resolution      Frequency      Class
---------      ----------     -------      ----------      ---------      -------
graphics0      f8000000       Present      1280x1024       72Hz
graphics1      f4000000       Present        Fixed
graphics2      f6000000       Empty
graphics3      fa000000       Present      1280x1024       72Hz

Current Console Path:         core.RS232_.9600.8.none

Stable Store Console Path:     GRAPHICS0
```

In this example, the graphics cards are configured as follows:

- Graphics slot 0 — Dual Color Graphics Card
- Graphics slot 1 — CRX48Z
- Graphics slot 2 — Empty
- Graphics slot 3 — Second head on dual card in slot 0

Setting the Monitor Type

Using the list in the example above, you can set the monitor type for graphics slot 0 by typing the following:

```
Configuration Menu: Enter command > monitor graphics0 Enter
```

NOTICE: You can exit at this point by entering **x**, and the monitor type will not be changed.

The screen displays the choice of supported monitors, similar to the following. Follow the directions in the screen prompts and enter the monitor type you want to configure (in this example, number 1).

```
MONITOR INFORMATION
Type       Resolution            Frequency
----       ----------            ---------
1          1280x1024             72Hz
2          1024x768              75Hz
3          1024x768              70Hz
4          1024x768              75Hz       Flat Panel
5          1280x1024             60Hz
6          1024X768              60Hz
7           640X480              60Hz
8          1280X1024             75Hz       VESA
9          1024X768              75Hz       VESA
10          800X600              75Hz       VESA
11          640X480              75Hz       VESA
12         1280X1024             72HZ       GrayScale
13         1280X1024             50HZ

Enter monitor type selection from list above (or 'x' to exit): 2
  2        1024x768              75Hz

Press <y> to save this monitor type or <x> to exit monitor selection: y
```

The MONITOR INFORMATION table reappears with the new monitor shown in slot 0.

```
Slot #          HPA          State       Resolution      Frequency      Class
---------      ----------    -------      ----------      ---------      -------
graphics0      f8000000      Present      1024x768        75Hz
graphics1      f4000000      Present      Fixed
graphics2      f6000000      Empty
graphics3      fa000000      Present      1280x1024       72Hz

Current Console Path:        core.RS232_.9600.8.none

Stable Store Console Path:   GRAPHICS0
```

Trying to change the monitor type on a slot that cannot support that monitor results in a warning, as shown in the following example:

```
Configuration Menu: Enter command > monitor graphics1 Enter

MONITOR INFORMATION

Reminder: SGIC only supports one type of monitor.
          Changing its monitor type will not have any effect.

Slot #          HPA          State       Resolution      Frequency      Class
---------      ----------    -------      ----------      ---------      -------
graphics0      f8000000      Present      1024x768        75Hz
graphics1      f4000000      Present        Fixed
graphics2      f6000000      Empty
graphics3      fa000000      Present      1280x1024       72Hz

Current Console Path:        core.RS232_.9600.8.none

Stable Store Console Path:   GRAPHICS0
```

Trying to change the monitor type on an empty slot, gives you this warning message:

```
Configuration Menu: Enter command > monitor graphics2 Enter

MONITOR INFORMATION

WARNING: Intended graphics hardware does not exist.
          Be sure to install the hardware after you power down the system.

Slot #           HPA           State       Resolution      Frequency      Class
---------      ----------     -------      ----------      ---------      -------
graphics0      f8000000       Present      1024x1280       75Hz
graphics1      f4000000       Present        Fixed
graphics2      f6000000       Empty
graphics3      fa000000       Present      1280x1024       72Hz

Current Console Path:         core.RS232_.9600.8.none

Stable Store Console Path:    GRAPHICS0
```

Displaying the Current Memory Configuration

The following sample screen output using the **memory** command shows first, a memory configuration table with properly-installed and configured memory (Sample Output 1); and second, output when a SIMM has been improperly installed (Sample Output 2).

To display the current memory configuration for your system, from the Information Menu of the boot console interface, follow the directions in “Accessing the Boot Console Interface” earlier in this appendix. Once you are in the Boot Console Interface Main Menu, type:

```
Main Menu: Enter a command or a menu > information Enter
```

This places you in the Information Menu. From here type:

```
Information Menu: Enter command > memory Enter
```

The screen displays a list of the current memory SIMMs configured for your workstation.

Sample Output 1

The following sample shows the memory configuration table when memory SIMMs are properly installed and configured.

```
MEMORY INFORMATION

DETAILED MEMORY CONFIGURATION TABLE

   SPA        GROUP  SMC   SMC Status    Bank  Bank Status   Size   Slot/Sys Brd
   ---        -----  ---   ----------    ----  -----------   ----   ------------
0x00000000      0     0    Configured     3    Configured    16MB       0a/b
                      1    Configured     0    Configured    16MB       2a/b
                      2    Configured     0    Configured    16MB       0a/b
                      3    Configured     3    Configured    16MB       2a/b
0x04000000      1     1    Configured     3    Configured    64MB       1a/b
                      3    Configured     0    Configured    64MB       1a/b

  Group 0 interleaved  4 ways over  4 banks
  Group 1 interleaved  2 ways over  2 banks
```

```
Active, Installed Memory (bytes)  :  201326592  of Standard DRAM's
Deallocated Pages (bytes)       –          0
                                  ---------
Available Memory (bytes)          :  201326592

Good Memory Required by OS (bytes):    8151040

       Memory
HVERSION  SVERSION
--------- ---------
 0x0490  0x00000900
```

Sample Output 2

The following sample shows the memory configuration table when a memory SIMM has been improperly installed, or not installed in pairs. In this example, there is only one SIMM installed in slot 4a. Note that now the BAD MEMORY TABLE is displayed.

```
MEMORY INFORMATION

  WARNING:  Memory banks deallocated due to a SIMM size mismatch or a SIMM failure.
            Refer to the ME command in the INFORMATION menu for error information.

DETAILED MEMORY CONFIGURATION TABLE

   SPA        GROUP  SMC   SMC Status    Bank  Bank Status   Size   Slot/Sys Brd
   ---        -----  ---   ----------    ----  -----------   ----   ------------
0x00000000      0     0    Configured     3    Configured    16MB       0a/b
                      1    Configured     0    Configured    16MB       2a/b
                      2    Configured     0    Configured    16MB       0a/b
                      3    Configured     3    Configured    16MB       2a/b
0x04000000      1     1    Configured     3    Configured    64MB       1a/b
                      3    Configured     0    Configured    64MB       1a/b

  Group 0 interleaved  4 ways over  4 banks
  Group 1 interleaved  2 ways over  2 banks
```

```
BAD MEMORY TABLE

SMC   SMC Status    Bank  Bank Status    SIMM Size   Slot/Sys Brd
---   ----------    ----  ------------   ---------   ------------
 1    Present        1    Sizing Error      0MB         4a/b
 3    Present        2    Sizing Error      0MB         4a/b

Active, Installed Memory (bytes)  :  201326592  of Standard DRAM's
Deallocated Pages (bytes)       –          0
                                   ---------
Available Memory (bytes)          :  201326592

Good Memory Required by OS (bytes):    8151040

       Memory
HVERSION  SVERSION
--------- ---------
 0x0490  0x00000900
```

Displaying the Status of the EISA Slots

The **eisa** command lets you identify all EISA cards currently installed on your workstation by showing you the current status of your workstation's four EISA slots. It is available only in the Information Menu.

To use the **eisa** command, from the Information Menu of the boot console interface, type:

```
Information Menu: Enter command > eisa Enter
```

The following table appears:

```
Slot #         Slot State         Device Information
-------        ------------       --------------------
   1           Empty              Empty
   2           Unconfigured       HWP1850
   3           Empty              Empty
   4           Configured         INP0100
```

"Slot #" is the slot number as seen on the back of your workstation; "Slot State" is the current state of any card in each slot; and "Device Information" is the compressed EISA ID, read from the EISA card itself.

Setting the Auto Boot and Auto Search Flags

Auto Boot boots the operating system whenever your workstation is turned on.

auto boot and **auto search** are variables stored in your workstation's non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset these flags to new value, the change takes effect the next time you reboot the workstation.

To examine the state of the **auto boot** and **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto Enter
```

If **auto boot** is set to **on**, your workstation automatically attempts to boot the operating system when turned on. If **auto boot** is set to **off**, your workstation enters the boot administration mode of the boot console user interface.

The state of the **auto search** flag determines how your workstation seeks a boot device during autoboot. If **auto search** is set to **on**, your workstation will search for other boot devices if the primary boot device is not available. If **auto search** is **off**, your workstation will default to the boot administration mode if it can't see the primary boot device.

To change the state of the **auto boot** or **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto boot state Enter
```

or

```
Configuration Menu: Enter command > auto search state Enter
```

where *state* is **on** or **off**.

Displaying and Setting the Fastboot Mode

The **fastboot** mode allows your workstation to boot quickly by performing a less extensive check of the system's memory.

When **fastboot** is enabled (set to **on**), your workstation does a quick check of the memory and skips I/O interface testing during its power-on self tests. This enables your workstation to complete its boot process quicker. The default factory setting is for **fastboot** to be enabled (**on**).

When **fastboot** is disabled (set to **off**), more extensive memory testing and I/O interface testing is performed during the self tests, causing the boot process to take longer.

If you are experiencing difficulty in booting your workstation, set **fastboot** to **off** and reboot the system. The more extensive testing may reveal the error condition.

To display the status of **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot Enter
```

To disable **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot off Enter
```

To enable **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot on Enter
```

Displaying the LAN Station Address

The **LAN station address** is the label that uniquely identifies the LAN connection for your workstation at the **link level** (the hardware level).

It is sometimes necessary to supply the LAN station address of your workstation to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster.

To display your workstation's LAN station addresses, type the following at the prompt:

```
Configuration Menu: Enter command > lanaddress Enter
```

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

```
LAN Station Addresses:  123456–789abc
```

The address is for the system's built-in LAN.

Displaying System Information

The **all** command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information, from the Information Menu type the following at the prompt:

```
Information Menu: Enter command > all Enter
```

This information is paged to allow you to view it as necessary.

Displaying PIM Information

The **pim** command allows you to display the most recent PIM information for the specified fault type. To display PIM information for a specific fault, from the Service Menu type the following at the prompt:

```
Service Menu: Enter command > pim processor_number Enter
```

You can use **pim** in the following ways:

pim – gives all processors/all fault types

pim *processor_number* – HPMC information on given processor

pim *processor_number fault_type* – fault type information on given processor

Glossary

absolute pathname

The full pathname of a file, including all the directories leading to it, starting with the root directory ("/") and ending with the filename itself. *See also* **file**, **filename**, **pathname**.

access permissions

Settings that allow a user or group of users to read, write, or execute files. *See also* **file access permissions**.

active window

The window that is receiving input from the keyboard at the present time. If there is no active window, anything you type is lost. Only one window can be active at a time. The active window is said to have the "keyboard focus."

ANSI

The American National Standards Institute, a non–profit organization, made up of various expert committees, that publishes standards for use by national industries. ANSI has adopted the IEEE standards for local area networks.

argument

The part of a command line that identifies the file or directory to be acted on.

attachment unit interface (AUI)

A transceiver cable that conforms to IEEE 802.3 specifications.

back up

v. To make a copy of the file system on a tape or disk that can be stored separately from the original files. Also called “backing up the system” or simply “system backup.”

bitmap

Generally speaking, an array of data bits used for graphic images. Strictly speaking, a pixmap of depth one, capable of representing 2–color images.

boot

Short for bootstrap service. A service provided by a short program, stored in the read–only memory of your workstation, that loads the operating system (or any complex program) into main memory. Partner workstations provide bootstrap service to diskless workstations. *See also* **boot ROM**.

boot console interface

The interactive program that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console interface allows you to perform special tasks, display information, and set certain system parameters.

boot ROM

A read–only memory that is incorporated into a workstation for the purpose of starting the operating system, testing the terminal, and producing a standard display.

bootstrap service

See **boot**.

byte

A fundamental character–code unit, usually consisting of 8 bits.

CD–ROM

Compact Disc Read–Only Memory. *See also* **CD–ROM disc**, **CD–ROM drive**.

CD–ROM disc

CD–ROM discs are identical to the audio compact discs (CDs) used to record stereo music, except that they store data. CD–ROM discs are 120 mm (4.7 inches) in diameter, and use one data surface with a capacity of 600 MB. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed.

CD–ROM drive

A random–access, read–only, mass–storage device that uses removable CD–ROM discs. The drive contains a semiconductor laser for reading data optically and an embedded controller with a SCSI interface.

Central Processing Unit (CPU)

The part of a workstation that interprets and executes instructions.

child directory

See **subdirectory**.

click

To press *and release* a mouse button. The term comes from the fact that pressing and releasing most mouse buttons makes a clicking sound.

cluster

A group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a file–system server for the cluster clients. *See also* **cluster client**, **cluster node**, **cluster server**.

cluster client

A cluster node that does not have a local HP–UX file system. Its file system resides on the cluster server. *See also* **cluster**, **cluster node**, **cluster server**.

cluster node

A member of a group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a server to the cluster. *See also* **cluster**, **cluster client**, **cluster server**.

cluster server

A workstation that provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also* **cluster**, **cluster client**, **cluster node**, **host**.

command

An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also* **shell command**.

command argument

Information you provide on a command line to describe the object (usually a file or directory) to be operated on by the command.

command interpreter

A program that reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute other programs. An HP–UX command interpreter is called a shell. *See also* **shell**.

command option

Information you provide on a command line to indicate any special action you want the command to take. *See also* **default**.

configuration

The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term configuration may refer to a hardware configuration or a software configuration.

control key sequence

A keystroke combination used as a shorthand way of specifying commands. To enter a control key sequence, you hold down the control key while pressing another key.

cpu

See **Central Processing Unit**.

CRX color graphics

Expanded graphics capability offering 24–plane color, 24–plane Z–buffered color, or 48–plane Z–buffered color capability.

current directory

See **current working directory**.

current session

The work and processes that have been created since you logged into the system (and before you log out again). *See also* **session**.

current working directory

The directory in which a relative path name search begins, as well as the directory in which you are currently working. It is also called the working directory or current directory.

cursor

The small blinking box displayed in whatever screen is active at a particular time. The cursor marks your current typing position on the screen and indicates which program (HP VUE terminal window or shell) will receive your commands.

daisy–chaining

A method of connecting devices where the signal passes from one device to the next in serial fashion along a bus.

DDS tape drive

A device that stores data on Digital Data Storage (DDS) cassettes.

default

Most commands give you a choice of one or more options. If you don’t specify an option, the command automatically assigns one. This automatic option is called the default. *See also* **command option**.

dialog box

A special type of HP VUE screen that is called by the user from a window. Dialog boxes contain controls and settings. To display an example of a dialog box, click the Style Manager button on the Workspace, then click on Color.

directory

A special type of object that contains information about the objects beneath it in the HP–UX organizational structure. Basically, it is a file that stores names and links to files and other directories. *See also* **file**.

disk

A thin, round plate with a magnetic surface coating on which data is stored by magnetic recording. *See also* **floppy diskette**, **hard disk**, **CD–ROM disc**.

disked workstation

A workstation that has its own hard disk drive. *See also* **diskless workstation**, **node**, **partner node**, **workstation**.

diskette

See **floppy diskette**.

diskless booting

Loading the operating system into local memory from the disk of a partner workstation.

diskless workstation

A workstation that has no disk. A diskless workstation can use the disk of its partner workstation or other workstations. If necessary, it can also use the computational services of the partner workstation or other workstations. A diskless workstation boots from its partner workstation. *See also* **disked workstation**, **node**, **partner node**, **workstation**.

double click

To press and release a mouse button twice in rapid succession.

drag

To press and hold down a mouse button while moving the mouse (and the pointer on the screen). *See also* **drop**.

drive

See **CD–ROM drive**, **DDS tape drive**, **floppy drive**, **hard disk drive**.

drop

To release an icon that has been “dragged” to a new position. *See also* **drag**.

environment

The conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment variables**.

environment variables

The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, HOME) that define the conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment**.

ETHERNET

The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

Extended Industry Standard Architecture (EISA)

An industry standard bus architecture based on and compatible with that used by IBM in their AT series computers.

fast, wide SCSI

A 16–bit wide bus with high–power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 20 MB per second. *See also* **single–ended standard SCSI**, **Small Computer System Interface**.

file

The basic named unit of data stored on disk. *See also* **directory**, **filename**.

file access permissions

The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it). *See also* **access permissions**.

File Manager

The HP VUE application that allows you to manage your files and directories, and to set viewing preferences.

filename

The name given to a particular file. *See also* **absolute pathname**, **file**, **pathname**.

file server

A workstation whose primary task is to control the storage and retrieval of data from hard disks. Any number of other workstations can be linked to the file server in order to use it to access data.

file system

The organized set of files and directories on a hard disk.

floppy diskette

A thin, record–shaped plate that stores data on its magnetic surfaces. The system uses heads (similar to heads in tape recorders) to read and write data on concentric disk tracks.

floppy drive

A device that stores data on a flexible diskette.

hard disk

A type of disk that is rigid as opposed to a floppy diskette, which is flexible.

hard disk drive

A device that stores data on a hard disk. The hard disk is a permanent part of the drive and cannot be removed.

HCRX color graphics

Accelerated 8–plane or 24–plane graphics. *See also* **CRX color graphics**.

Help Manager

The HP VUE application that provides online help.

$HOME

The environment variable representing the home directory. This is the directory in which you are placed after you log in. Typically, this is `/users/`*login*, where *login* is your username. *See also* **home directory**.

home directory

A shorthand way of referring to a frequently used directory, almost always the login directory.

host

See **cluster server**.

host name

See **internet protocol address**.

HP–UX cluster

See **cluster node**, **cluster server**.

HP Visual User Environment

A user interface that draws a graphical layer over the complexities of the other layers of the system (the hardware, operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command–line prompt.

HP VUE

See **HP Visual User Environment**.

icon

A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

iconify

See **iconize**.

iconize

To turn a window or shell into an icon. *See also* **icon**.

Initial System Loader

The program that actually controls the loading of the operating system.

input device

Any of several pieces of hardware equipment used to give information to a system. Examples are the keyboard and the mouse. *See also* **output device**.

input window

The window that displays a program's prompt and any commands typed but not yet executed.

internet protocol address (IP address)

A string of characters that uniquely identifies a workstation in a network. Also referred to as the IP address, the system name, and the host name.

invisible filename

A filename in which the first character is a dot (.). Invisible filenames are not displayed by the listing commands such as **ls** and **ll** without add options, such as **–a**.

IP address

See **internet protocol address**.

ISL

See **Initial System Loader**.

kernel

The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

LAN

See **local area network**.

LAN station address

See **local area network station address**.

link

n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

v. To join together two or more objects.

local area network (LAN)

A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters that share data, hardware, and software resources via Networking Services software.

local area network station address

The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level.

log in

To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also* **username**.

login directory

The directory in which you are placed when you log in, usually your home directory. *See also* **home directory**.

Login Manager

The program that controls the initial startup of HP VUE and accepts the user’s username and password.

login script

The shell program that runs at each login, and sets the login environment for your system.

menu bar

An area at the top or bottom of a window that contain the titles of the pull–down or pop–up menus for that application.

minimize button

In HP VUE, a push button on the window frame that turns a screen into an icon. *See also* **icon**, **iconize**.

mouse pointer

See **pointer**.

name

A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character. *See also* **pathname**.

network

Two or more workstations sharing information. *See also* **cluster**, **workstation**.

network controller

A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

node

A network computer (workstation). Each node in the network can use the data, programs, and devices of other network nodes. Each node contains main memory and has its own disk or shares one with another node. *See also* **disked workstation**, **diskless workstation**, **workstation**.

node name

A unique identifying name given to a workstation in a cluster. *See also* **cluster**, **node**.

nonvolatile memory

System memory that retains its contents even after workstation power is turned off.

object

Any file, directory, or link in the network. *See also* **directory**, **file**, **link**, **pathname**.

operating system

The program that supervises the execution of other programs on your workstation. For example, the entire HP–UX system, including the kernel and all HP–UX commands. *See also* **kernel**.

option

See **command option**.

output device

Any of several pieces of hardware used for receiving messages from the workstation. Display screens and printers are examples of output devices. *See also* **input device**.

output window

The window that displays a process response to your command.

parent directory

A directory that contains other directories, each of which is then called a subdirectory. *See also* **subdirectory**.

partner node

A workstation that shares its disk with a diskless node. *See also* **diskless workstation**.

password

The word you enter next to the password prompt at login time. Keep your password secret and change it occasionally in order to protect your account from unauthorized use. *See also* **user account**.

path

The hardware address of a device that is attached to the I/O system of your workstation.

pathname

A series of names separated by slashes that describe the path of the operating system from some starting point in the network to a destination object. Pathnames begin with the name of the starting point, and include every directory name between the starting point and the destination object. A pathname ends with the name of the destination object. *See also* **name**, **object**.

permissions

A set of rights (read, write, execute) associated with an object in the file system. Determines who may use the object.

PID

Process Identification. Also referred to as a process ID. *See also* **process ID**.

pointer

Sometimes called the “mouse pointer,” the pointer shows the mouse location on the screen. The pointer’s shape depends on its location. In the HP VUE Workspace, the pointer is an X. On a window frame, the pointer is an arrow.

process

A computing environment in which you may execute programs; a program currently running in the system.

process ID

A unique identification number assigned to all processes by the operating system. Also referred to as a PID. *See also* **PID**.

program

A unit of executable code, in binary or “source” form. Most HP–UX commands and routines consist of programs.

prompt

A message or symbol displayed by the system to let you know that it is ready for your input.

push button

A graphic control that simulates a real–life push button. Use the pointer and mouse to push the button and immediately start an action.

RAM

Random access memory.

ROM

Read–only memory.

root

See **superuser**.

scroll bar

A vertical or horizontal bar located on the side or bottom of a window that allows the user to view information that does not fit within the window.

SCSI

See **Small Computer System Interface**.

server

A program that controls all access to input and output devices.

session

The time between when you log in and when you log out. Also called a work session or a login session. *See also* **current session**.

shell

A command–line interpreter program used to invoke utility programs. Some examples of HP–UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a command interpreter. *See also* **command interpreter**.

shell command

An instruction you give the system to execute a utility program or shell script. *See also* **shell script**, **utility program**.

shell script

A file that contains commands that the system can interpret and run in a shell.

shutdown

The process of taking the system from multi–user state to system administration state.

SIMM

See **Single In–line Memory Module**.

single–ended standard SCSI

An 8–bit wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters. *See also* **fast, wide SCSI**, **Small Computer System Interface**.

Single In–line Memory Module

A memory board.

slider

One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause a change.

Small Computer System Interface (SCSI)

An IEEE standard for interfacing a computer to multiple, disparate high–speed peripherals such as a floppy disk or a CD–ROM, singly or in combination. *See also* **fast, wide SCSI**, **single–ended standard SCSI**.

standalone

A workstation that is not part of a cluster. *See also* **cluster**.

Style Manager

The HP VUE application that provides the ability to customize various aspects of your system, including colors, fonts, the keyboard, the mouse, session startup and termination behavior, and access to other workstations.

subdirectory

A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the parent directory. The subdirectory is also referred to as the child directory. *See also* **parent directory**.

superuser

A user with permission to enter the top–level directory and make changes to files and programs that users are not allowed to change. To "become superuser" or "become **root**" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system as **root**, or by typing **su** at a command–line prompt. You must know the **root** password to become **root**.

system administrator

The person responsible for system and network installation, updating, maintenance, and security at your site.

system call

Invocation of a kernel process by a user program.

system name

See **internet protocol address**.

terminal window

A terminal window is a type of HP VUE window that emulates a complete display terminal. Terminal windows are typically used to fool non–client programs into believing they are running in their favorite terminal. When not running programs or executing operating system commands, terminal windows display the command–line prompt. *See also* **HP Visual User Environment**.

title bar

The rectangular area between the top of the window and the window frame, that contains the title of the window object.

transceiver

A device that transmits and receives signals.

user account

The system administrator defines a user account for every person authorized to use the system. Each user account contains the name the computer uses to identify the person (user ID), and the person's password. User accounts also contain project and organization names, to help the system determine who can use the system and what resources each person or organization can use. *See also* **user ID**, **password**.

user ID

The name the computer uses to identify you. Your system administrator assigns you a user ID. Enter your user ID during the login procedure when the system displays the login prompt. *See also* **user account**.

username

The name that the system recognizes as uniquely yours. Also known as your login name. The username is also the name that identifies you to the mail system and other software requiring secure entry.

utility

See **utility program**.

utility program

A program provided with the operating system to perform a frequently required task, such as printing a file or displaying the contents of a directory. *See also* **command**, **shell command**.

window

A rectangular area of the screen for viewing information. HP VUE allows you to create several types of windows on the screen. Each window is a separate computing environment in which you may execute programs, edit text, or read text. *See also* **Workspace Manager**.

Window Manager

The HP VUE program that controls the size, placement, and operation of windows.

working directory

See **current working directory**.

Workspace

What the screen becomes when you start HP VUE. Although you can hide the workspace under terminal windows or other graphic objects, you can never position anything behind the workspace. All windows and graphic objects appear stacked on the workspace. *See also* **HP Visual User Environment**, **terminal window**.

Workspace Manager

The program that controls the size, placement, and operation of windows on the HP VUE Workspace. The Workspace Manager is a special Window Manager. *See also* **Window Manager**.

workstation

A compact, graphics–oriented computer having high speed and high memory capacity. A workstation usually includes a keyboard, a monitor, and a system unit. *See also* **node**, **disked workstation**, **diskless workstation**.

Index

A

audio
  features, 1-13
  specifications, 1-14

audio connectors
  headphones OUT, 1-12
  microphone IN, 1-12

auto boot, command, D-23

auto command, D-23

auto search, command, D-23

B

boot command, D-9

boot console interface, D-1
  accessing, D-8
  auto boot, D-23
  auto search, D-23
  bootable media
    searching for, D-11
  booting the workstation, D-9–D-10
  commands
    eisa, D-22
    monitor, D-15, D-19
  displaying memory information, D-19
  displaying status of EISA slots, D-22
  fastboot, D-24
  features, D-3–D-7
  LAN station address, D-24–D-25
  menus, D-4–D-7
  paths, D-12–D-13
  PIM information, D-25
  resetting the workstation, D-12
  setting the monitor type, D-14–D-18
  system information, D-25

boot console user interface
  booting the workstation
    Initial System Loader, D-10
  paths
    mnemonic style notation, D-12

booting the system, D-9–D-10
  failure. *See* solving problems
  Initial System Loader, D-10

C

CD-ROM discs
  care of, 3-5
  loading, 3-6–3-14
  overview, 3-5–3-6
  unloading, 3-9–3-14

CD-ROM drive, 3-1
  busy light, 3-21–3-22
  controls and features, 3-3–3-4
  installing in system unit, B-14–B-15
  jumper settings, B-15
  loading and unloading a disc, 3-6–3-14
  mounting and unmounting a disc, 3-15–3-22
  operating controls and features, 3-4
  overview, 3-3–3-4
  troubleshooting, 3-22
  verifying the configuration, 3-11

closing the system unit, B-8–B-9

commands
auto, D-23
auto boot, D-23
auto search, D-23
boot, D-9
cpio, 4-17, 5-11
cstm, 6-15
eisa, D-22
exit, 6-17
fastboot, D-24
fbackup, 4-17
ftio, 4-17
ftp, 1-28
ioscan, 4-10, 5-5
lanaddress, D-24
lanscan, 1-24
lp, 2-9, 2-12
mediainit, 5-8
monitor, D-15, D-19
mt, 4-17
path, D-12
pim, D-25
rcp, 1-28
reset, D-12
rlogin, 1-27
search, D-11
tar, 4-13, 5-8
t**elnet**, 1-27
verify, 6-16

configuring hardware, B-1
changing monitor type, B-60
closing the system unit, B-8–B-9
installing
CD-ROM drive, B-14–B-15
DDS tape drive, B-16–B-19
EISA or graphics board, B-50–B-59
floppy drive, B-20–B-29
hard disk drive, B-30–B-33
mass storage devices, B-10–B-26
memory, B-36–B-43
opening the system unit, B-6–B-7

connectors
system unit
ac power, 1-16
audio headphones−OUT, 1-12
audio microphone−IN, 1-12
HP HIL, 1-15
keyboard, 1-14
mouse, 1-14
network, 1-15
parallel, 1-15
PS/2, 1-14
rear panel, 1-10–1-16
RS-232, 1-15
SCSI, 1-16
serial, 1-15
stereo line−IN, 1-12
stereo line−OUT, 1-12

controls
system unit
front panel, 1-6–1-9
power switch, 1-7

cpio command
DDS-format tape drive, 4-17
floppy disk drive, 5-11

cstm command, 6-15

D

DDS tape
archiving data, 4-13
listing files, 4-16
restoring files, 4-15
transferring data, 4-13
write-protect tab, 4-8
write-protecting a data cassette, 4-8
writing to, 4-14

DDS tape drive, 4-1
cleaning the tape heads, 4-7–4-8
controls and indicators, 4-3–4-6
installing in system unit, B-16–B-19
jumper settings, B-17, B-18

loading and unloading a data cassette, 4-9–4-18
media interchangeability restrictions, 4-8, 4-17
media life, 4-7–4-8
overview, 4-3–4-6
troubleshooting, 4-17–4-18
using device files, 4-12
verifying the configuration, 4-10

DDS-2 tape drive
data compression mode switch settings, B-19
display codes, 4-6
LED indicators, 4-6–4-8
jumper settings, B-18

DDS-DC tape drive
display codes, 4-4
LED indicators, 4-4–4-8
jumper settings, B-17

description of system. *See* system description

device files
SCSI ID and device file information, 1-25

device files overview
CD-ROM drive, 3-14
DDS tape drive
compressed mode, 4-13
noncompressed mode, 4-12
floppy disk drive, 5-7

E

eisa command, D-22

EISA slots
displaying the current status, D-22

electronic mail. *See* networking, mail

electrostatic discharge precautions, A-4–A-5

emissions regulations, A-3–A-4

exit command
support tools manager, 6-17

F

fastboot, command, D-24

fbackup command
DDS-format tape drive, 4-17

File Transfer Protocol. *See* **ftp** command

floppy disk drive, 5-1
configuring the floppy driver, 5-12
formatting a diskette, 5-8–5-12
inserting and removing a diskette, 5-4
installing in system unit, B-20–B-29
jumper settings, B-21
terminators, B-22
troubleshooting, 5-12
using device files, 5-7
verifying the configuration, 5-5–5-12
write-protecting a diskette, 5-3–5-4

floppy diskette
archiving data, 5-8–5-12
formatting, 5-8–5-12
listing files, 5-10–5-11
restoring files to system, 5-9–5-10
saving files, 5-9
transferring data, 5-8–5-12
write-protect tab, 5-3–5-4

ftio command, DDS-format tape drive, 4-17

ftp command, 1-28

H

hard drive
  adding, B-33–B-35
  attaching mounting bracket, B-29
  configuring, B-33
  installing in system unit, B-30–B-33
  jumper settings, B-28

hardware configuration. *See* configuring hardware

HP HIL, 1-15

I

information
  getting system information, D-25

ioscan command
  CD-ROM drive, 3-12
  DDS-format tape drive, 4-10
  floppy disk drive, 5-5

IP address information, 1-26

J

jumpers,
  SCSI ID
    CD-ROM drive, B-15
    DDS-2 drive, B-18
    DDS-DC drive, B-17
    floppy drive, B-21

K

keyboard
  connector, 1-14, 1-15
  differences, 1-18
  general information, 1-18–1-20
  ITF, 1-18
  key equivalents, 1-19–1-20
  PS/2, 1-18

L

lanaddress command, D-24

LANIC ID, 1-23–1-24

lanscan command, 1-24

laser safety statements, A-5–A-6

LCD
  system unit, 1-6–1-9

LEDs
  CD-ROM drive, 3-21–3-22
  DDS-2 tape drive, 4-6–4-8
    display codes, 4-6
  DDS-DC tape drive, 4-4–4-8
    display codes, 4-4
  removable device, 1-8
  system unit, 1-6–1-9

logging in from a remote terminal. *See* **rlogin** command

lp command
  printing a file, 2-12
  testing the printer, 2-9

M

mail, 1-27

media interchangeability restrictions
  DDS tape drive, 4-8

mediainit command
  floppy diskette, 5-8

memory
  displaying the current configuration, D-19

memory configuration, B-36–B-43

memory failures, 6-11–6-17

memory SIMM
  sequence, B-40

mnemonic style notation, D-12

monitor
  changing type
    boot console interface, B-60
  command, D-14
  displaying current information, D-15
  setting the type
    at power on, B-60

monitor command, D-14, D-15, D-19

monitors
  description of supported monitors, 1-17

mounting a CD-ROM disc, 3-15–3-18

mouse
  general information, 1-21

mouse connector, 1-14

mt command
  DDS-format tape drive, 4-17

N

network connectors, 1-15

network file system, 1-28

networking overview, 1-27–1-28
  ftp command, 1-28
  mail, 1-27
  network file system, 1-28
  rcp command, 1-28
  rlogin command, 1-27
  telnet command, 1-27

O

on-line help
  cpio command, 4-17, 5-11
  cstm command, 6-15
  fbackup command, 4-17
  floppy information, 5-11
  ftio command, 4-17
  ftp command, 1-28
  lp command, 2-12
  mediainit command, 5-11
  mt command, 4-17
  rcp command, 1-28
  rlogin command, 1-27
  tar command, 4-17, 5-11
  telnet command, 1-27

opening the system unit, B-6–B-7

operating system overview, 1-22–1-28

ordering information
  DDS-format tape cassettes, 4-18
  floppy diskettes, 5-12

P

parallel connector, 1-15

path command, D-12

pim command, D-25

pointing devices
  general information, 1-21

power connector, 1-16

power switch
  system unit, 1-6–1-9

printer. *See* setting up a printer

printing
  files, 2-12
  solving problems, 2-13

problems. *See* solving problems

product description. *See* system description

PS/2 connectors, 1-14

R

rcp command, 1-28

remotely copying files. *See* **rcp** command

removable drives
  attaching mounting bracket, B-23

removable media
  adding/removing
    CD-ROM drive, B-14
    DDS tape drive, B-16
    floppy drive, B-20
  using
    CD-ROM drive, 3-6 − 3-14
    DDS tape drive, 4-9 − 4-18
    floppy drive, 5-3 − 5-12

reset command, D-12

rlogin command, 1-27

RS-232
  connector, 1-15
  pinout, 1-15

S

safety and regulatory statements, A-1

SAM utility
  adding a hard drive, B-33–B-35
  configuring the floppy driver, 5-12
  mounting a CD-ROM disc, 3-15–3-18
  setting up a local printer, 2-4–2-9
  unmounting a CD-ROM disc, 3-18–3-20

SCSI
  assigning device IDs
    fast, wide, C-20–C-23
    single-ended standard, C-16–C-19
  bus length
    fast, wide, C-12
    single-ended standard, C-9
  cables, C-5
  configuration constraints, C-7
    fast, wide, C-9
    single-ended standard, C-7
  connections, C-1
  connectors and terminator, C-7
  device IDs, C-14–C-23
  port connections, C-21
  restrictions, C-5–C-9

SCSI bus, differences, C-3–C-4

SCSI connectors, 1-16

SCSI IDs
  information, 1-25
  jumpers
    CD-ROM drive, B-15
    DDS-2 drive, B-18
    DDS-DC drive, B-17
    floppy drive, B-21

SCSI-2
  bus length, C-9
  configuration constraints, single-ended standard, C-7
  determining bus length, C-9–C-11

SCSI-3
  bus length, C-12
  configuration constraints, fast, wide, C-9
  determining bus length, C-12,C-13

search command, D-11

serial
  connector, 1-15
  pinout, 1-15

setting up a printer, 2-1
  attached to workstation, 2-4–2-9
  for network printing, 2-10–2-11
  local printer, 2-4–2-9

solving problems, 6-1
  boot failure, 6-10
  indicated by the LCD, 6-12–6-14
  memory failures, 6-11–6-17
  printing, 2-13
  problems and solutions, 6-3–6-9
    boot failure, 6-4
    CD-ROM drive, 6-7
    DDS tape drive, 6-8
    floppy disk drive, 6-9
    hard disk drive, 6-6
    loading and booting the OS, 6-4
    network, 6-5
    powering up, 6-3
  system verification tests, 6-15–6-17
    Support Tools Manager, 6-15–6-17

subnetwork mask information, 1-26

Support Tools Manager, 6-15–6-17

switches, power, 1-7

system administration manager
  adding a hard drive, B-33–B-35
  configuring the floppy driver, 5-12
  mounting a CD-ROM disc, 3-15–3-18
  setting up a printer, local printer, 2-4–2-9
  unmounting a CD-ROM disc, 3-18–3-20

system default printer, 2-7

system description, 1-3–1-5

system information. *See* information

system overview, 1-1

system unit
  connectors, 1-10–1-16
  controls, 1-6–1-9
  LCD, 1-6–1-9
  LEDs, 1-6–1-9
  power switch, 1-6–1-9

system verification tests, 6-15–6-17

T

tar command
  DDS-format tape drive, 4-13
  floppy diskette, 5-8

telnet command, 1-27

testing the printer, 2-8–2-13

troubleshooting
  See also solving problems
  boot failure, 6-4
  CD-ROM drive, 3-22
  DDS tape drive, 4-17–4-18
  floppy disk drive, 5-12
  hard disk drive, 6-6
  loading and booting the OS, 6-4
  network, 6-5
  powering up, 6-3

U

unmounting a CD-ROM disc, 3-18–3-20

V

verify command, 6-16

W

warning and caution statements, A-6